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MANUAL TRAINING MAGAZINE

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MANUAL TRAINING MAGAZINE

OCTOBER, 1904

MANUAL-TRAINING HIGH SCHOOLS, OR MANUAL TRAINING IN HIGH SCHOOLS?[1]

CHARLES B. GILBERT.

POSTULATE. The segregation of manual training in separate high schools means giving the fullest enjoyment of its advantages to the minority who elect to attend these schools, and entirely deprives all other secondary students of manual-training instruction. The proper answer to the question of the title then involves much more than appears upon the surface. At least three fundamental educational questions must be answered first. They are:

First, what is the purpose of manual training in secondary schools? Is it exclusively educational, exclusively occupational, or has it a dual purpose?

Second, what is the function of the state with regard to industrial or occupational training?

Third, what time, if any, should be set by school authorities when students must select their future occupations, and thereafter receive definite training for them, or be deprived of certain important educational advantages?

Of course I shall not attempt to answer these three great questions in full, but I hope to show their bearing upon the question at hand, and to show that our answer to that will depend upon the views we take of the other three questions. Because, if the purpose of teaching manual training in secondary schools is purely educational, it stands to reason

[1]Read before the Manual Training Department of the National Educational Association at St. Louis, July 1, 1904.

that it should be a co-ordinate part of the curriculum of all secondary schools where it appears at all. If it is purely occupational or industrial, then when the time has arrived in the course of education for the choice of an occupation and for directing all energies toward that, at that time manual training should cease to be a part of the general curriculum and should be given only to those who desire to make use of it for occupational ends.

If the time for this choice is the end of the elementary school course and the beginning of the secondary course, the question is settled at once. Separate manual training high schools should be maintained instead of manual training courses in other high schools—that is, whenever economic conditions render it possible.

If it has both an educational and an occupational purpose, then provision should be made for meeting both these ends.

But is it one of the offices of the state to definitely equip by technical training young people for their chosen callings? If not, and if the purpose of teaching manual training in secondary schools is not educational, but occupational, then there should be no manual training taught after the elementary school. If it is the function of the state, on the other hand, to teach trades, and if the time to begin is the end of the elementary course, and if the purpose of teaching manual training is to lead to these trades, then, of course, there should be separate schools for the subject, and their courses should be sufficiently enlarged to include practically all remunerative trades.

Does this seem like an impossible discussion of the question? It is simply putting the case fairly, because the teaching of manual training is for educational or occupational ends, or both. If the first or the third, it stands to reason that it should not be segregated and placed so that the majority of students cannot take it. If the second, then it should be so segregated.

Now, (to answer these questions) is the purpose of teaching manual training educational or occupational? In the elementary grades, educational without a doubt. If it is educational up to the end of the grammar school course, on what principle does it cease to be educational and become purely occupational at the door of the high school? Is it not, indeed, one of those very subjects which especially appeal to the adolescent, bringing into his horizon that sense of reality from the lack of which he is apt to suffer at that time in the ordinary school course?

This is not saying it may not also be occupational, and surely no one can reasonably claim that if it is a desirable subject for educational ends

up to the age of fourteen, it ceases at that point to be a desirable subject. That being the case, why should the great majority of high school pupils who have pursued it with interest up to that point then be deprived of it. For it follows necessarily that if it is segregated and taught only in a single school, even in a large city like New York, only a very small minority of the high school students can have any of it, and whatever educational value there is in it is consequently lost to the majority.

Second, at what time does it become absolutely necessary for the youth to select his calling under penalty of being deprived of valuable educational opportunities if he does not so choose? The answer is easy. There is no such time for all or a majority. It is purely an individual question. Some must leave to go to work at a calling chosen or thrust upon them as soon as compulsory attendance laws allow, or sooner, if they can evade the officers. Others must go to work at something definite for a livelihood after leaving the grammar school course. In fact, the vast majority of boys and girls leave before reaching the high school, as we all know. Some, a saving minority, are allowed by good fortune and their parents to pursue their education farther and go through the high school, and a rapidly decreasing minority through the college and university. And very many go even through these last without having decided what definite line of work they will pursue in life. They are gathering knowledge to use and accumulating power.

Now shall the state step in at any point and say to those fortunate youth, "You must give over some elements at least of the general culture which you are enjoying unless you decide now what calling you want to pursue"? Clearly, it is not a function of the state to determine the age at which the youth shall either go to work for a living or decide what he will do for a living. If that is true, then on what ground can a subject which has proved to be of great educational value through the elementary course be taken away from him at this point unless he chooses a calling?

Third, is it a proper function of the state to give exclusively occupational training at all? That is a question that I am not prepared to answer definitely pro or con. If I should say this is the function of the state, I should be accused at once of rank socialism, but if I were to call attention to the law schools, medical schools, dental schools, and agricultural schools sustained in practically all of our western states at public expense, though most of them of university grade, I should prove that I have good company at least in my socialism.

Indeed, if the function of education by the state is to make better citizens, and the ability to earn a good living and the wise choice of an

occupation are fundamental to good citizenship, it is difficult to formulate a telling argument against occupational training at public expense. But suppose we make a concession in this direction, we surely do not place ourselves in the class of those who would give only occupational training and who would deprive those not choosing an occupation of some important element of culture.

Consequently, if manual training is an important element of culture, so important that it is worth the state's while to pay for the cost and to put it into all the elementary schools, and if it is also an especially valuable training for the students during the adolescent period, should not the facilities for its pursuit be placed within the reach of all secondary school students, even if we also grant special facilities to those who choose some occupation to which manual training leads and who want to continue in school, and if we regard it as the office of the state to furnish this occupational training?

Is not my point clear? It may be well to have special manual-training schools. It is certainly well to have thorough manual-training instruction through the secondary school for all who wish to pursue this with a view to using it in the work of life, but the arrangements made to meet the needs of such should not ignore the larger class of those who would pursue the subject for its cultural value. While manual training should be offered to the fullest extent to those students who want to pursue it thoroughly and broadly, should it not also be offered in more limited courses to those who want to give a shorter portion of time to it? Shonld not those boys and girls who have had an hour or two hours, or three hours a week throughout the elementary school for this work be allowed to devote an hour, or two hours, or three hours a week during the secondary school to the same work?

One of the chief arguments in favor of the adoption of manual training in elementary schools is that it furnishes a new medium of expression, because it is so readily correlated with the other subjects, essecially the mathematical and scientific. Does this cease to be true in the high school?

Another strong argument generally employed for manual training in the elementary schools is its democratic influence, its tendency to create sympathies between those who toil with their hands and those who do not; to dignify manual labor. Does this value cease when that most important of all developmental periods—the adolescent—comes in? Can any one advance any good evidence that a single educational advantage

which is admitted to belong to this subject during the elementary-school period ceases to belong to it for the secondary period? I trow not.

My position then is that the opportunity to pursue manual training as a cultural study should be offered to all secondary students; that a further opportunity to pursue it as an occupational subject should be offered to those who have determined at as early a time as that of entering the secondary school that they want to make this use of it.

It is evident that this can be better done in the ordinary high school building than in a special school, and of the arrangement I will speak in a moment. There is one special objection to the separate manual-training school of which I will speak here and whose force I recognize, although I may advocate special schools in certain cases. That is, the tendency of all such institutions is to place the emphasis upon the mechanical at the expense of the intellectual features of the curriculum. It may be said that the special manual-training school is not necessarily vocational, but the very fact that it is a special school almost of necessity makes it such. The specialists who are doing the teaching, from force of habit and from uncontrollable psychological causes will put the stress of their work upon those features which are specifically manual and will make it an occupational school. I state this practically *a priori*. An observation of schools generally also will confirm it.

The manual-training school needs a corrective. It needs the contact with students and teachers who are more concerned with other phases of education than this in order to keep it sane and sound and wholesome, unless we want it to run into the trade school pure and simple, and surely no one here wants that.

There are economic conditions also that of necessity will affect the answer to this question in most cities.

These conditions will vary according to circumstances, chiefly, perhaps, according to the size of the city. A manual training school run independently is, on the face of it, a very expensive school. A full corps of teachers for all the subjects—mathematics, languages, sciences and the rest, must be maintained and a full corps of shop instructors, and unless the school is a large one so that the classes can be kept full, which is not the case in the smaller cities, the expense is very great. In very large cities, of which there are but a few, it may be that there will be students enough wanting to make manual training the major course of their secondary school work to justify this expense.

New York and Chicago, Philadelphia, and possible Boston, St. Louis and San Francisco, with perhaps two or three other cities in the country

could maintain manual-training schools in which the cost per capita would not be very much greater than in the ordinary high school. The cities of a lower grade, from 150,000 population, say, to 300,000 can do this with difficulty by shaving salaries and by paring down expenses, but even then the expense will be somewhat larger than for ordinary schools. But when a smaller class of cities is reached, especially those below 100,000, it will be found that the per capita cost of students in special manual-training schools is so great as to be practically prohibitive of such schools.

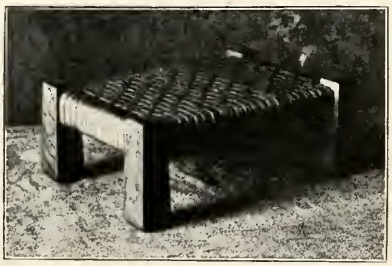
But to my mind, stronger than all economic arguments for manual training in the ordinary secondary school is the need of the ordinary secondary school student for some of it. There is no reason why a good high school, teaching all the subjects, should not have a complete manual-training equipment as a part of its plant. In my judgment, every good high school should have such an attachment, and should offer to students who want to pursue manual training fully just as complete courses in it as can be offered in the very best separate manual training school, and also to those students who do not desire to make manual training the major subject limited courses of one or two hours a week, continuing the interest started in the grammar school, amplifying and illustrating the other subjects of the curriculum, especially mathematics and the sciences, enlarging the views of life, and furnishing a certain amount of valuable manual dexterity without materially increasing the cost of their instruction or of the manual-training work. Moreover, the students who are taking the special manual-training courses can have the beneficial influence of the very best teachers in all the other subjects, and of contact in class with those students who are making specialties of Latin, Greek, modern languages, history, literature, mathematics, sciences and what not.

This mingling of those who are taking different courses in one school is of advantage to both. There is a little danger of class feeling between manual-training high schools and other high schools. The students in classical high schools are apt to look down a little upon the students who are taking manual-training courses, and the students of the manual-training schools are apt to have a rather uncomfortable, antagonistic feeling toward the mere "book" students, as they deem the others.

It is sometimes said that teachers in the regular high schools are not in sympathy with manual training, and that it will not have a fair chance if made a part of the regular school. There is no stronger argument for such a union. If teachers are narrow enough to undervalue this great

subject, they need the broadening influence which comes from contact with it. If it is all that we claim for it, it will stand for itself, and if put into the good high school as a regular course, with a complete and extensive equipment, with a full corps of special teachers, and with large classes taking it with enthusiasm, no one need be found to stand as its defender.

Experience running over a good many years has shown me how popular such courses as may be allowed in manual-training schools can be made with those students who are not specialists. I think it is unfortunate to have the large number of students entering the high school specialize early. I confess to the old fashioned belief in old fashioned culture, enriched and enlarged by new fashioned studies, among which stands manual training. If it is so good a thing do not hedge it off by itself and limit it to the few—let all have it. Keep it where the many can see it, and come to value it and can take advantage of its courses to the fullest. So I would have all high schools, as I have said, with full manual-training equipment which should be considered as essential a part of their plants as are the laboratories and the classrooms. I would have courses such as would appeal to both boys and girls and have them open to all—major courses for those who desire to differentiate their work at this point, and minor courses for those who need them. I would bring all the boys and girls into the same environment and under the same general influence, and treat manual training through the high school as at least educational and for all, and in addition to this, occupational for those who wish so to make it.



THE ACTIVITIES OF CHILDREN AS DETERMINING THE INDUSTRIES IN EARLY EDUCATION.[1]

L. D. HARVEY.

BY THE term "industries", as used in the subject on this program, I understand is meant those activities which may properly be employed in the training of the hand and in the mental training which necessarily accompanies any real manual training. Until recently the industries as used in this sense have had no place in the early education of children except as they have come into play outside the schoolroom. The fact that this topic finds a place upon the program and has been discussed by the distinguished people who have preceded me, is evidence enough that there has been a change in educational sentiment which has resulted in a demand for the employment of hand work as well as brain work in the systematic education of children.

I take it that this demand has come, not alone from a consideration of the natural activities of children, but from a consideration of what the activities of children ought to be for their best development. The place of this subject in the education of children should be determined as the places of other subjects have been determined.

Reading, writing, and arithmetic, the time-honored three R's, and the other subjects found in the elementary course of study, have found a place in the training of children, not because of any elaborate studies of children's natural activities, but because of a study of the activities of mankind in general, of the activities which the child of today will be called upon to exercise in his maturer life. I take it that up to the present time the subjects and the phases of subjects, which have been employed in the education of children, have been settled by a consideration of what is needed to prepare them to meet the demands which the exigencies of life would make upon them. The demands upon the indi-

[1] This paper was read before the Department of Elementary Education of the National Educational Association in St. Louis, July 1, 1904. It followed a paper by Miss Katharine E. Dopp, and was succeeded by an address by Dr. G. Stanley Hall. We would like to publish all these, but our space will not permit. We present the one containing the most striking features, and hope for a further discussion of the subject in a later issue.—ED.

vidual in the industrial and in the social world have been larger factors in determining what shall find a place in his education than his immediate activities have been.

Broadly stated, the needs of the child present and future, growing out of the demands of society and of the nature of the human being have determined, and in my opinion, must continue to determine, what shall be the material with which he is to be employed in the process of education. The activities of the child at any given stage of the educative process, considered from physical, mental, and moral standpoints, becomes a factor in determining *what of this material* shall be used at any given time, and how it shall be used. The child's activities today may be taken as an index of that which interests him today, and not of that which may interest him.

The education of the child has for its purpose his development through environment largely, but through environment as shaped and moulded by the demands of society. In a large measure education is a modification of environment, and this modification is brought about by influence external to the child being educated. Our entire school system is a modification of the natural environment of the child, coming not solely nor even largely from a study of his activities, but from the experience and judgment of society as to his future needs as a member of that society. Keeping in mind that for which the child is to be prepared, not in any given industry, but as a useful member of society, as fixing the aim, and what he is prepared for now, as determining what is to be done today of the things which are essential to be done for the working out of the aim of education, it follows that if the industries are to find a place in the training of the child, then his present activities at any stage do not furnish a proper basis for the determination of what industries are to be employed, but only of those industries which are to be employed, what shall be employed now, and how they shall be employed.

The different subjects which find a place in the elementary course of study are there because of their need in the proper development of the child for the activities of life. Whether any subject shall find a place in the elementary course of education or not, is determined by its utility value and its training value.

I use the term "utility value" here not in the broad sense in which it might properly be used, that whatever results of value from training is by reason of that fact, of utility to the individual because of the added power resulting from the training, but in the narrower sense of useableness in the productive activities of life.

The value of any study to a child results from the usefulness to him in later life of the facts of that subject, and of the development of power to use these facts intelligently and to assimilate and use other facts through the training resulting from the study of that subject. In some subjects the utility value is much larger than in others, and it is not true as has sometimes been assumed, that the less the knowledge or utility value of a subject, the greater its value for training.

In the early stages of the education of the child, the utility value of the subjects taught is determined largely by their usefulness in the interpretation of the symbols of further knowledge and in the mastery of that knowledge. The training value is determined by the character and extent of the resulting development of the powers of the child which most need development for the proper unfolding of his capabilities. As a matter of course, the work required of the child in any subject at every stage of the educative process must, in extent and character, both as to matter and method, be adapted to the capabilities of the child at each successive stage. The general question as to whether the activities and interests of the child shall determine the subject matter and method of education at any stage must be settled with the following considerations in mind:

1. The activities and interests of a child at any given period are not necessarily a measure nor an index of his capabilities, but may be the outcome of the accident or novelty of his immediate environment, and as transitory as the conditions which called out the activities and interests.

2. The normal activities of children living under widely diverse social and industrial conditions, manifest themselves in varying forms until they are brought together in the schoolroom; but when brought into the school, the influence of the teacher, the reaction of each upon the other, and the new environment produce activities of a new type not exhibited in the old environment.

3. The difference in the activities of children due to the different influences under which they have been reared to the time of entering school, renders it impossible to make these activities the determining factor in selecting the industries which shall be subjects of instruction so long as our present system of school organization continues, because class instruction is at present a necessity, and whenever the activities of each child determine what he shall be taught, then class instruction must give way to individual instruction, and this makes demands for increased equipment, for a much larger teaching force, and wider range of preparation on the part of the teacher, and for an enormous increase in the ex-

penditures, and necessarily for a complete change in our present system of school management—a program too large for immediate or even remote realization.

4. The activities of children growing out of the conditions under which they are brought in the schoolroom are in a sense artificial; the child is in the school because he is sent there; he forms a part of the social organism, the school, and therefore must fit into his place in that organism. shaping his activities not as an isolated individual, but as a member of the school society with reciprocal rights and duties. He is here in this social organism, the school, fitting himself for his proper place in the larger organism, society. If the activities manifested here are to be taken as the determing factor in deciding what he shall be taught, then we have changed ground and now make the activities growing out of an environment and conditions imposed upon him, the basis for our selection of the material of instruction. If we grant for one moment that the teacher or the other school authorities may impose conditions which modify the natural activities of the child, or produce new activities growing out of these new conditions, then we have granted that the school authorities and not the child have the right to determine the conditions most favorable for the development of the child.

Ages ago, a wise man said, "Train up a child in the way he should go, and when he is old he will not depart from it." It is perhaps equally true to say, "Let the child come up in the way he would go, and when he is old he will not depart from it." I am a believer in the idea that the way the child would go is not always the way in which he should go, and that the combined experience and wisdom of those who have engaged in training the young are safer guides for training than the impulses of the child, or the accidents of his immediate environment.

The present status of civilization is very largely a result of invention and imitation; invention by the few, imitation by the many. Growth in invention is the result of a study of the new and present, and not of the old and remote. Development through imitation comes through imitation not of the old and obsolete, but of the old which has persisted and shown its worth, and of the new which has shown improvement upon the old.

If the industries are to find a place in the educational scheme, it would seem that the industries of today, the outgrowth of the development of the race, rather than the industries which have been outgrown and become obsolete, should furnish the field from which the material to be used in instruction should be drawn. It may be claimed that present day industries are too complex and too highly organized to furnish

proper material for the activities of childhood. But we must not forget that the child is in contact with the industries of today; that they largely create his environment, and that he is concerned with that which is present and active far more than with that which is past and obsolete; that our present stage of development is due to the fact that every progress made has been the basis upon which further progress has become possible. In our efforts to adapt the industries in education to the comprehension of the child, we must remember that primitive industries are more remote from the child's thoughts and interests than are many of the industries of to-day; that it requires mental activity of a higher order to comprehend the development of industries from primitive times to the present, step by step, than it does to understand such of the present industries as may properly be employed as subjects of instruction; and, that in attempting to utilize primitive industries in a scheme of education, we must create a new environment and a new interest, both of which find no re-inforcement in the environment and interests of today, and both of which are foreign to the nature of the child today.

If it be true that in the development of the individual from childhood to the maturity of his powers at the present time, there is in epitome the development of the race, it will be well to remember that the strides he makes in his fifty years of unfolding are much longer than those made by the race in the thousands of years it has occupied the earth. And it may be pertinent to suggest that if there be such a thing as racial instinct the time may come when the inheritance of each child shall start him some distance along the road from the point where primitive man began his journey.

I am a believer in the doctrine that material and method adapted to educational ends, in so far as these are controlled or controllable by school authorities, should be determined with reference to definite ends, clearly perceived by those charged with the administration of school affairs, but not within the range of the child's comprehension during the early periods of training. No one will contend for a moment that the material and methods for this use should be determined without reference to the child's normal activities and powers, but that is quite a different thing from insisting that the child's activities shall be the determining factor in their selection. The character of the child's activity resulting from a stimulus supplied by the teacher and selected with reference to meeting the child's needs and determining his capabilities, may show the wisdom or unwisdom of the selection either of material or of the mode of its treatment at that particular time, and may suggest needed modification

in the teacher's requirements. It will be observed, however, that the initial point from which we lead up to the new determination by the teacher or school authorities is not the self-determined activity of the child, but the determination by the teacher of the stimulus which in his judgment will call forth the activity then needed and of which the child is capable. The resulting activity would not have appeared but for this stimulus, and the stimulus would not have acted except through the teacher's initiative. The stimulus presented in the way of required treatment of prescribed material for definite results, must be determined by the needs of the child, and the needs of the child at any given stage, are determined by his future needs and present capabilities, and not by his self-determined activities.

The introduction of any particular industry into the field of elementary education, or to be more exact, the introduction of any particular form of hand-work, can be justified, if it can be shown that the mental and physical activities essential for the proper performance of the work so introduced are such activities as are needed by the child at the time when they appear for the proper unfolding of his powers, and that no other form of work can be given at that time which will better meet the needs of the child.

No kind of work, industrial or otherwise, can be justified because it has utility and training value if there can be substituted for it within the same period another kind of work which has a higher utility and training value.

The great problem in industrial education today is to determine what activities of the child need development and what lines of hand-work are best adapted to meet this need; and this will demand an examination of each particular phase of hand-work with reference to the varieties of mental activity involved in its performance and the relative prominence of each variety, and a similar consideration of the physical activities involved. It will demand further, such a knowledge of the child's present capabilities and needs as will enable the proper authorities to adapt the work at any given stage to these capabilities and needs.

In so far as the activities of the child throw light on his powers and capabilities, they are a factor in determining what work may be undertaken, but are of more value in determining *what of the work required as necessasy* shall be given at each particular stage in his progress.

THE RELATION OF THE ARTISTIC TO THE MECHANICAL IN THE MANUAL ARTS.[1]

WILLIAM F. VROOM.

THE qualities which we are about to consider (described as "artistic" and "mechanical" respectively, for want of more appropriate terms), may be traced either in the process of production or in the thing produced. They may, and generally do, exist together in the same process or the same product, but, though practically inseparable, they may be arbitrarily separated and analyzed for the sake of comparison. Under the first head will be classed those operations, not mechanical, which tend to satisfy the æsthetic sense, looking to pleasing proportion and graceful outline rather than utility, and dealing largely with natural forms. The term "mechanical" is applied to those processes which have to do with straight lines and mechanical curves, and the plane and solid figures derived therefrom. Such operations are employed in mechanical drawing, most of the woodworking trades, stone masonry, machinist's work, etc. This definition of the term, it should be noted, does not include that which makes it *automatic*, or independent of thought or volition.

It will be observed that the above classification is distinctly different from that which places the structural over against the decorative; for the structural may not be mechanical, and the decorative includes much less than the artistic.

All work may be said to be mechanical or otherwise in proportion as the transformation of the material depends upon the automatically directed action of tool against material (or material against tool), or is independent of such direction. Applying this test to what is known as "hand-work," let us take planing as a familiar example. The thickness of the shaving is automatically controlled by the adjustment of the plane-iron, and the straight sole of the plane is a guiding surface which enables the workman to make his work straight. Planing is, therefore, in its degree, mechanical work. Sawing is mechanical in so far as the plane surfaces of the saw, by contact with the kerf, form a guide to keep

[1]Abstract of a paper read at a meeting of the School Crafts Club, New York, March. 1904.

the cut straight. Even chiseling is often mechanically aided by the sliding of the level surface of the tool upon the wood. In mechanical drawing straight lines are produced by contact of the pen with the ruler, or circles by contact of the needle-point with the board. In the case of the wood-carver's art there is little mechanical quality perceptible, and in the use of the jack-knife there is less. In the field of metalworking a wide divergence will be observed. The work of the blacksmith is chiefly freehand, while that of the machinist is, perhaps, of all work the most strictly mechanical. Let it be observed, however, that the automatic character of the machinist's tools does not make the man an automaton. On the contrary there are few, if any, trades known to modern industry which demand higher intelligence on the part of the worker than that of the machinist.

Mechanical means are, in general, most appropriate for the production of geometrical forms, and freehand methods for free forms. This truth appears to have been overlooked, almost by common consent, by the designers of manual-training courses, who have placed knives in the hands of their children and give them forms to cut out composed of nothing but straight lines, circular curves, and plane surfaces.

A glance at the evolution of the arts will show that from the earliest times when men began to use their hands in productive occupations, their efforts may be referred to one of two more or less clearly defined impulses—the impulse to make something for use and the impulse to produce something pleasing to the senses. Here we have the germs, respectively, of the industrial arts and the fine arts. Yet neither phase of work in those early days was *mechanical*. During the savage and pastoral stages of man's development the fine arts progressed in a rude fashion, while of the growth of the mechanical arts we have no evidence, but, on the contrary, have every reason to suppose that no such growth took place. Not until the dawn of the agricultural era, when men began to think about making for themselves permanent dwellings, did the necessity for what has been included under the head of "mechanical construction" appear, and then it doubtless came by slow degrees.

James Hannay, in his History of Acadia, says, "The red Indians of America . . . appear to be a race of men who had attained the highest state of advancement which it was possible for a race of hunters to reach." This may seem a startling statement. When we contrast the achievements of modern science and art, amazing in their diversity and magnitude even to us who dwell in the midst of them, with the rude life and surroundings of our Indian neighbors, we can hardly realize that the

latter might have been our equals but for the accident that they chose to continue the nomadic life, while our forefathers determined to settle down and build houses and villages. Yet we cannot avoid the conclusion that such is the fact.

The first dwellings erected by men appear to have been mud huts, or wigwams of saplings and bark. As the need for something better was felt the work of construction must take more rational shape. In obedience to the laws of gravitation, whether in buildings of wood or of stone, walls must be vertical and foundations horizontal, and the straight line and right angle would soon become familiar features of the art. The use of units of measurement would gradually be perceived, and in the hewing of timber with plane surfaces we discern the beginning of applied geometry. And so we may trace the development of mathematical conceptions in parallel lines with the development of building, and the various arts and crafts which sprang up with it.

With the construction of dwellings arose new desires and ambitions. Communities were formed, and the demands of social intercourse began to be felt. By degrees larger and better dwellings must be erected, and not only so, but temples must be built for public worship, palaces for living kings and sepulchres for dead ones. So architecture took its birth. Architecture, it is true, belongs to the fine arts, according to the accepted use of that term; but the essential element of the art is what we have elected to call the "mechanical." Without this element, Pyramids, Parthenon and Gothic cathedral would have been alike impossible; whereas, without the artistic element the Pyramids do exist, and the erection of buildings as large and as scientifically constructed as the Parthenon or the cathedral of Milan would be perfectly feasible.

So we may conclude that while the fine arts, in a rudimentary condition, undoubtedly existed long before men had any conception of rational mechanical construction, their development, with that of language, history, the useful arts, and all things which constitute modern civilization, has been arrested in those races which have not passed beyond the condition of hunters and shepherds—in those races, that is to say, which have not elected to build houses, and consequently have not developed the mathematical sciences. It is not that because man was civilized he developed a taste for mathematics which never entered the consciousness of his uncivilized brother, but rather that with the development of mathematics he became civilized, and through the necessity of building came the development of mathematics.

The fine arts obviously have their origin in æsthetic desire—the pleasure found in the contemplation of something beautiful, while the mechanical arts spring from the necessities of life. In painting and sculpture the artist undertakes the reproduction of natural forms; in the mechanic arts the form is that best suited to the use of the thing made, and most feasible from the structural point of view, and is therefore usually geometrical. Hence we have on the one side imitation, and on the other invention. The one is concerned with ideals, the other with realities; the one aims at beauty of form and finish, the other at utility and strength. Artistic work develops individuality or self-assertion, while mechanical work demands self-restraint; on the one side the imagination is stimulated, on the other the reasoning powers. The mechanical element in the arts is the intellectual as distinct from the emotional; the rational as distinct from the empirical; the inventive as distinct from the imitative.

These respective characteristics may be illustrated by a comparison of the work of the sculptor with that of the artisan. Let us suppose the one to be making a statue of a horse, the other a cube, The sculptor may select as a model any one of an infinite number of horses, or an ideal horse, possessing the characteristics of all but the details of none, and he may place the model in any position he chooses. The mechanic has no choice. All horses may be different, but all cubes are alike. The sculptor, it is true, is bound by certain rules—the laws of gravity, of anatomical structure and proportion, etc.—but his horse may be brought into conformity with all these and yet be as dead as the cube. It is outside of this realm of rules and measurements that the individuality of the artist finds free play. By skillful touches, keeping his ideal before him, he imparts to his work that quality which transcends rules and defies analysis, and the extent to which he is able to do this successfully is the measure of his standing as an artist. How much can the mechanic do to his cube outside the realm of rules and measurements? Not a single stroke. He has one absolute standard of perfection, and to that standard he must conform. A cube which displays the individuality of the workman is not a cube. Slovenliness, which is indifferent to standards, and self-assertion, which is intolerant of restraint, are alike fatal. Self must be repressed. Through absolute conformity alone lies the road to successful accomplishment.

The key-note, then, of the mechanical is *conformity*, while that of the artistic is *freedom*.

Attending the practice of these different pursuits we naturally look for the development of correspondingly different mental and moral qualities. It is a truism in psychology that every man's character is, barring the heriditary factor, a composite of all the habits which he has acquired, and has been moulded by the experiences through which he has passed. Habits of thought and will, as well as bodlly habits, are affected by one's daily occupation; and it is the habit of will, the moral habit, which is the important factor in the outcome of any educational process. In the moral sphere, as in the realm of material things, the law of necessity prevails. As man must perforce supply himself with the things on which life depends, so, to mainiain his moral integrity, he must walk in the strait and narrow way of duty. It seems reasonable to conclude that he who has best formed the habit of self-control and obedience to law in the material world will be best equipped for obedience in the field of morals. The habitual attitude of the good workman toward his work is that *it must be done right.* Will any psychologist, new or old, deny that such an habitual attitude tends to the moral betterment of the whole man? Mechanical work also tends toward the moral habit of self-reliance — consciousness of the ability to do. Closely allied to this is the inventive faculty, which, not content with saying "I *can* do whatever I find needful", goes further and says, "I *will* do something which has never been done before". The moral qualities of patience and perseverance are also promoted by work which demand close application and the surmounting of difficulties.

It is evident that the following of one's own free fancy will not tend to develop such habits, which we may call habits of conformity, in the same degree as will the pursuit of mechanical occupations. In the sphere of the fine arts there is no law of necessity. We look there rather for such qualities as the love of nature, the appreciation of the beautiful, and an habitual striving after the attainment of the ideal.

Comparing, then, the characteristics of the two kinds of work as we have traced them, they will be found to yield the complementary qualities which go to make up the well rounded character—on the one side the sterner virtues which impel us onward in the path of duty, and on the other the more spiritual qualities which lead us to love beauty, goodness, and truth, and give us veneration for the Source of all that is good and beautiful.

When we apply these conclusions to our school work the inference is obvious: In a well-balanced curriculum neither the artistic nor the mechanical element will be neglected. Decoration, the reproduction of

natural forms, and the making of simple articles of utility, not of geometrical design and not produced by mechanical means, should come first in the school as they came first in the race—not because the race developed that way, but because the child develops that way. As to just where the mechanical element should be brought in, and what proportion it should bear to the other at any given period of the child's development, no fixed rule can be laid down, as its benefit depends largely upon the aptitude and temperament of the individual; but its importance as an essential factor in a well-balanced curriculum should not be overlooked.

Basket weaving, clay modeling, wire bending, wood-carving, with many other occupations which might be enumerated, though of unquestionable value in their places, are not mechanical, and therefore cannot profitably be substituted for such subjects as wood-joinery, mechanical drawing or machinist's work. All creative work is good, but the pupil will not have received all the benefits of creative work until the free form has been supplemented by the geometrical; plastic and flexible materials by those of harder texture; bending and soldering by joint-making; the empirical by the rational; the freehand by the mechanical.

The relation of the artistic to the mechanical is a relation of harmony, not of antagonism. So let our mechanical work be artistically proportioned, and, if you please, decorated, always having in mind the purpose it was intended to serve. And so let the worker be equipped with sound common sense and moral rectitude, in harmonious combination with high and beautiful ideals, thus tending to the formation of that best product of the school, a noble character.

A SPECIAL CLASS IN A CITY SCHOOL.

ELIZABETH FARRELL.

IN EVERY large school will be found children who are not, in school parlance, "up to grade". Their deficiency may be due to a variety of causes acting singly or together — ill health, defects in special senses, defects in the motor nerve tracts, or to mental or physical fatigue. To aid boys who for one or more of these causes were found deficient, there was organized in Septemper, 1900, in one of the largest schools on the lower east side of New York, a class that, it was hoped, would solve the problem of their training.

This class when organized, consisted of twenty boys. They were the children of foreign-born parents, Italians and Russian Jews, an odd Greek or two, and one very poor specimen of the native-born American. In age they varied from a little fellow eight years old to a youth in his fifteenth year. Many of these boys were bootblacks or newsboys with no regular hours for work or play. They were never expected home, and went there only when there was no other place to go. Many of them slept in newspaper offices or over the warm sidewalk gratings outside. What food they had was, for the most part, bought from push-carts or from the cheap restaurants in the newspaper district. Those who were not bootblacks or newsboys were workers in the sweat-shops. Between the two classes there was small choice.

Before the class was organized it was thought wise to ascertain just how far below the average of physical development each defective boy

was. Measurements in girth of chest, height, and weight, were taken and compared with anthropometric tables collated in Boston and Chicago. The fact was established that each of these boys who could not keep up to his grade was below the average in height and in weight. A series of experiments designed to test the accuracy of the special senses demonstrated that here also these children were at a disadvantage. Sight and hearing were, in nearly every case, defective, and in two instances the sense of touch was abnormal. The tests served to indicate various defects in the avenues to and from the brain, as well as malnutrition in the brain itself. In the matter of actual disease it was found that six were suffering from rickets, two from epilepsy, one from acute neurosis, and one from infantile paralysis; while two others had in infancy sustained injuries from falls that were of such a nature as to be a cause of constant nervous irritation.

The work attempted with these boys was based on the theory that eventually they would be returned to the regular grades. With this end in view the regular course of study was taken as a guide; and by means of individual help and instruction each child was, so far as possible, fitted to enter the grade his years seemed to warrant. That this idea was not broad enough to include all the elements found in the "special class" was soon apparent. It made no provision for the boy who, because of physical or mental defect, never could be sent to the regular grade. As a working plan it might have served if each child in the class had been but slightly below the normal. But when a boy ten years old, who for three years had been trying to learn to read, was found to be absolutely incapable of putting beads on a string, it was deemed unwise to continue the pressure upon the mental side, and high time to consider the possibility of his development "motor-wise". It became, in a brief time, very clear that the regular course of study for the normal boy could not be the guide in the training of the defective; neither could the aim of work with the latter be simply to return him to his "grade" The special class was indeed his grade, and only through the methods of the special class could his advance be looked for.

A few months of work with the class resulted in certain deductions: (1) That the work might be graded for the backward and for so-called "incorrigible" children who, as a class, are to be separated from defective children. (2) That the general physical conditions must be improved; and that, when pathological conditions exist, the co-operation of the dispensary and the hospital must be secured. (3) That with each of the groups named above, *i. e.*, the backward, the incorrigible and the

defective, the greatest stress should properly be put on work that develops the habit of doing, the power of imitation, and the ability to choose.

All the subsequent work done in this special class was based on these deductions. The work was gradually graded. The individual child and

INDIAN LIFE WAS FOR A WHILE THE "CENTER OF INTEREST".

his best development was the beginning and the end of all effort. In the matter of improving the physical health and home environment it was, of course, essential that the parent do his share. Often this was the larger half, but in nearly every case it was done. To many mothers who were conscious that "Tony" or "Abie" were not just like other children, it seemed a waste of time and money to go to the dispensary. But when, with the treatment for adonoids, there came a mental brightening of the boy, the wisdom of the visits to the doctor were brought home.

In connection with the question of physical health came the school luncheon. This was settled by having a simple meal prepared and served by some of the girl pupils in the classes attending the school kitchen. Bathing, as a means of improving and maintaining the health had a place in the progrom of the class. Not merely directions for bathing, but an actual bath was given to each child, physically fit, at

least once a week. The school itself, it may be noted, is equipped with a bath-room with twenty "showers".

Along with the attention to food and bathing there was carried on a series of corrective gymnastics: Exercises to increase respiration and

VARIED MATERIALS ARE USED IN THE CLASS.

circulation; to secure muscular control and co-ordination; to develop promptness, attention, power of imitation; exercises to correct the shambling walk and the clumsy, uncertain and awkward movements.

In the belief that motor training offered the line of least resistance, and consequently, for the defective child, the line of greatest development—mental, physical and moral—constructive work was made the center of all schoolroom activity. The emphasis was put on what the child could do, rather than upon what he could not do. Instead of having books and pencils the prominent things, the sand, the clay, the looms, the hammers, the work-benches, and the colored papers, were made the characteristic features. The problem in each case was to find out what the individual pupil could do, and then to lead him forward from that.

The training along the lines of sense perception was often begun in a most elementary way. It was found necessary in some cases to isolate one of the special senses for the purpose of offering it proper exercise.

The child possibly was blind-folded, and to train his ear, required to recognize his companion's voice or a tone of the piano. To train his sight, he was asked to match colors and forms. To train his sense of touch he put his hand in a grab-bag and first told the qualities of the object he grasped and then named it. He possibly sorted materials —silk, cotton, woolen, leather, paper—and if of little muscular power, worked in sand and in clay. With an older boy as a helper, he made a "big hill" and a lot of marbles, a basket, or a cup for his milk.

As his power developed and his confidence in himself grew, he was shown how to work at the blackboard with colored chalk. This he found fascinating. At first he made little cramped lines and pictures. It was often necessary to take hold of his hand and with big exaggerated movements, have him "feel" as well as see the action. After awhile this big work was done without any help. When he was flushed with his success a new problem was suggested. Instead of marks made promiscuously on the blackboard, he was asked to make them only in a particular place, *i. e.*, between two horizontal lines. With this accomplished the marks were a basis for number-work, by requiring a certain number of them to be made. The work named, and other work of similar nature, were carried on through certain well-defined sequences until the boy who, on entering, was cramped and muscle-tied, was able to execute with promptness and freedom exercises which involved curves both simple and compound, circles, ellipses, and some of the simple scrolls. Outlining with nails a picture drawn on soft wood offered another means of developing precision and accuracy, and at the same time secured a degree of concentration and effort scarcely to be equalled in any practice. After these fundamental movements had by degrees been mastered, the defective child was asked to string beads, to use the peg-board, to weave colored splints, to sew simple outlines on cards, and when necessary, to sew buttons on his own clothes. Thus he acquired control of accessory muscles and so increased his finger power. The braiding of raffia and the unraveling of rope offered him other exercises to the same end.

It was not expected that each child would conquer all the difficulties presented in the constructive work given to him. No pupil was expected to secure "perfect" work. What was aimed at in each case was the revelation to the pupil of his own powers through his mastery of a variety of materials. To this end, work in wood, basketry, chair-caning, bent iron, tin, cardboard, and cord was presented as the needs, or the desires, of the individual required.

Experience proven that the boy who had abundant oppurtunity to give expression to his motor instincts grew also along the lines of general intelligence; he gained a knowledge of materials; he learned to know how certain forces would effect certain materials; his attitude toward things became an interested one. The school became a place where things were made and tried, and perhaps made again; it became a place where in working with materials astonishing and delightful, results were brought about. Not all the pupils responded in equal measure, but in the end many of the boys who had failed to keep up with their classes in the grades came, through their constructive work, to feel the necessity for the more or less formal school work; many came to feel the need of knowledge of how to read and to write. Thus was the hoped-for end gained, that to these dwarfed natures should come that which to the normal boy is a birth-right—the desire to know. With this passion once instilled, the rest—discipline, skill, culture—is easy.

ONE WAY TO KEEP A CLASS IN MECHANICAL DRAWING TOGETHER.

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THE somewhat universal custom of using a text-book, blackboard or blueprint for giving instruction to students in drawing oftimes prevents an instructor from varying the data for a given drawing. The writer has found the hektograph better suited to the preparation of such data, since it enables one to produce a large number of copies in a short time and at so small a cost that one feels perfectly justified in printing several varieties of data for each drawing.

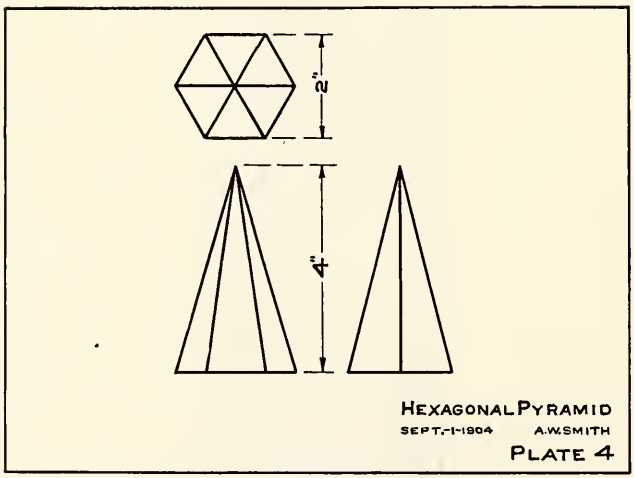


FIG.-1

It is a common practice among teachers of drawing and shop-work to use supplementary exercises to meet the needs of individual students and to keep the members of a class nearer together; but to a teacher of drawing the duty of correcting drawings is made much less burdensome if the entire class can finish a given drawing at about the same time. Thus it is the writer's desire to show by a few illustrations how a class may be kept together without the use of supplementary exercises.

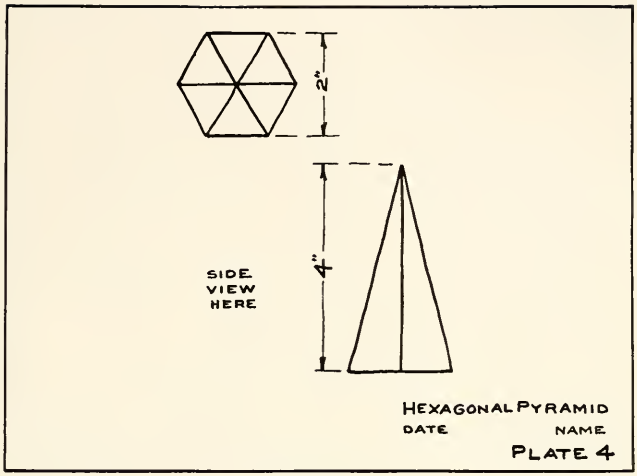


FIG.-2

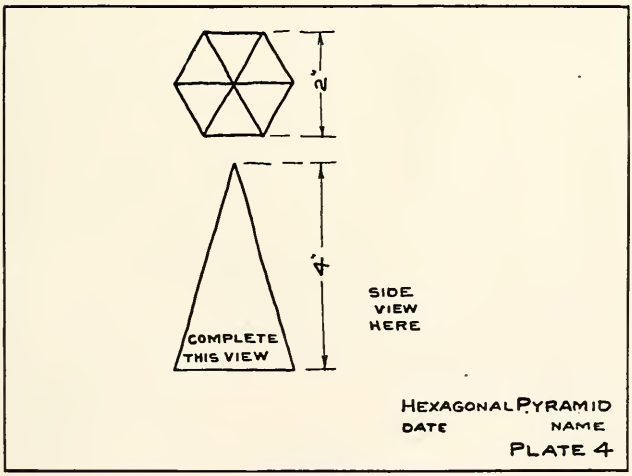


FIG.-3

Realizing that many teachers of drawing are still using geometric forms unapplied, the writer will first consider the drawing of a hexagonal pyramid, shown in Fig. 1.

Sketches corresponding to Figs. 1 and 2 are given to the weaker and average students of the class, while those shown in Figs. 3 and 4 are given to the brighter and more rapid ones.

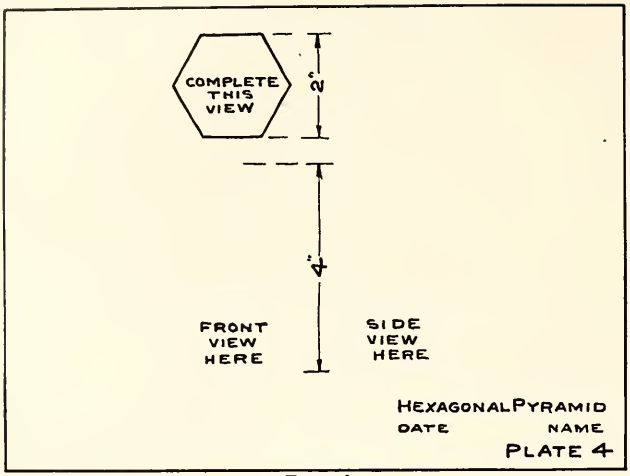


FIG.-4

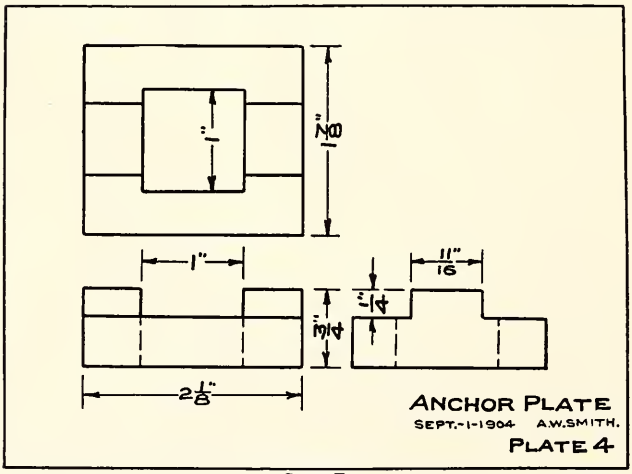


FIG. 5

Thus it will be seen that the brighter students are required to spend more time in thought, while the weaker ones, having more assistance, are able to complete the drawing at about the same time.

With the character of students and sizes of classes (100 students) that the writer has to teach, it is even more essential that at least six or eight varieties of data be given for a single drawing, in order to keep the class together.

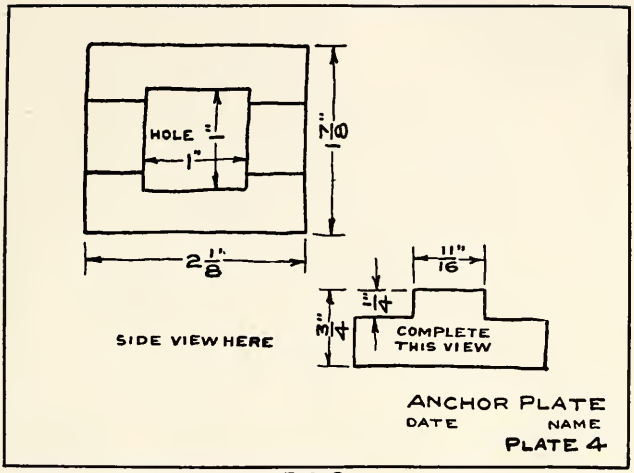


FIG. 6

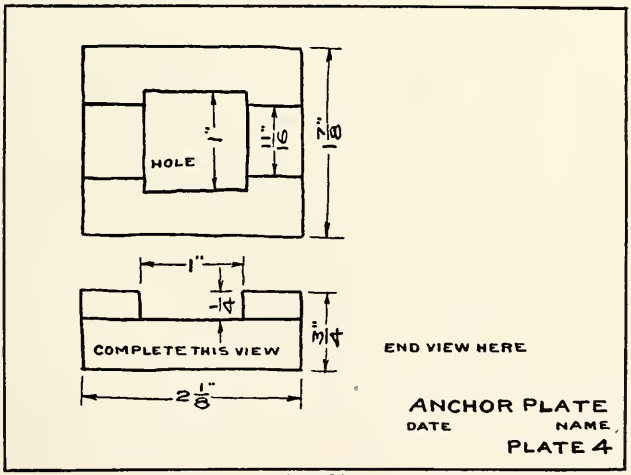


FIG. 7

Figs. 5 to 10 are examples of data given for the fourth drawing in the writer's course in shop drafting.

It will be seen from these examples, that a better opportunity is afforded, when the object is not only selected to fit in a well-defined sequence but is of such utilitarian character that the brighter students are requested to study out the specifications which regulate the form and

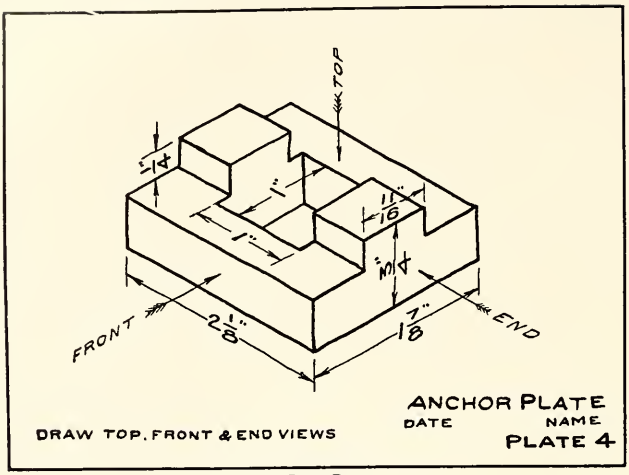


FIG. 8

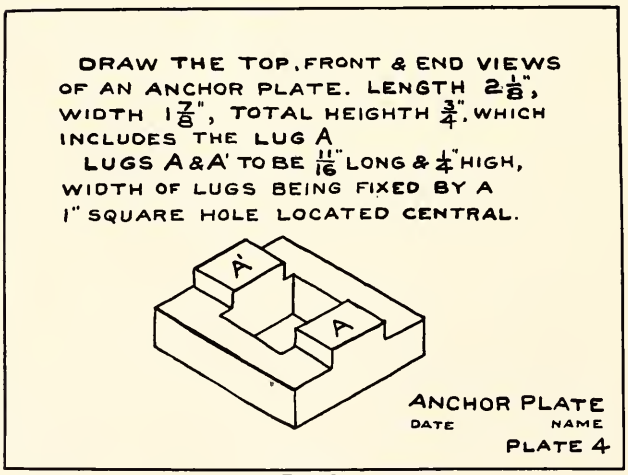

DRAW THE TOP, FRONT & END VIEWS
OF AN ANCHOR PLATE. LENGTH 2 1/8",
WIDTH 1 7/8", TOTAL HEIGHTH 3/4", WHICH
INCLUDES THE LUG A
LUGS A & A' TO BE 11/16" LONG & 1/4" HIGH,
WIDTH OF LUGS BEING FIXED BY A
1" SQUARE HOLE LOCATED CENTRAL.
A'
A
ANCHOR PLATE
DATE
NAME
PLATE 4

FIG. 9

size of the object, while the weaker students, being deprived of such training, are able to complete the drawing at about the same time.

It is the writer's desire to urge all teachers of drawing to substitute the geometric forms applied for those unapplied, without sacrificing sequence, as is often the case where a course of drawing is correlated with an already established shop course.

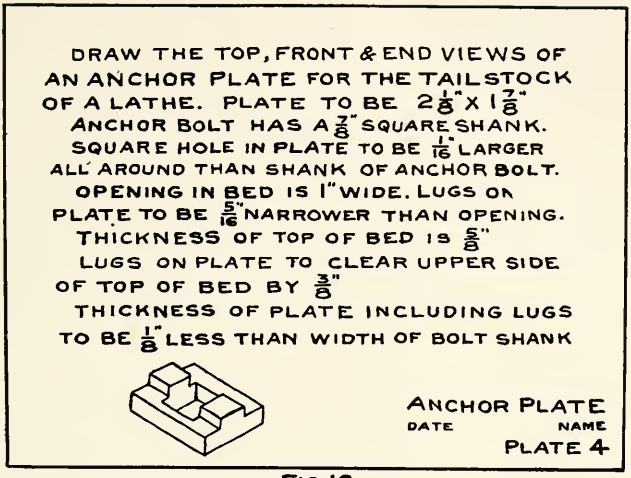

DRAW THE TOP, FRONT & END VIEWS OF
AN ANCHOR PLATE FOR THE TAILSTOCK
OF A LATHE. PLATE TO BE 2 1/8" X 1 7/8"
ANCHOR BOLT HAS A 7/8" SQUARE SHANK.
SQUARE HOLE IN PLATE TO BE 1/16" LARGER
ALL AROUND THAN SHANK OF ANCHOR BOLT.
OPENING IN BED IS 1" WIDE. LUGS ON
PLATE TO BE 5/16" NARROWER THAN OPENING.
THICKNESS OF TOP OF BED IS 5/8"
LUGS ON PLATE TO CLEAR UPPER SIDE
OF TOP OF BED BY 3/8"
THICKNESS OF PLATE INCLUDING LUGS
TO BE 1/8" LESS THAN WIDTH OF BOLT SHANK
ANCHOR PLATE
DATE
NAME
PLATE 4

FIG. 10

In the writer's set of models used in simple projection, sixteen of the twenty are objects which the student will observe at some time during his shop work, but to show that no attempt has been made to correlate the two studies, it may be mentioned that the student will observe the first model in the machine shop, eighteen months after he makes the second model in the carpenter shop.

The mere fact that the objects to be drawn may be observed in the shops, oftimes affords additional opportunity to vary the data on a given drawing. For illustration, there may be an understanding between the drawing and shop instructors, such that should a bright student be sent to the shop to obtain data for a drawing in the regular course, it would be the shop instructor's part to give that data in such a way that the student must spend much time in thought and observation in the shop to obtain the required data, while the weaker student, with sufficient data is making the same drawing without leaving the drawing room.

It may be of interest to mention that the writer has noticed that the brighter student takes pride in the fact that he is obliged to work harder and never feels envious of his weaker classmate when he finds he has finished the same drawing in less time having had more assistance.

EDITORIAL.

A New Name

Have we not come to the time when a change is urgently needed in the term applied to constructive work in the schools? Is there a manual-training teacher in the country who does not increasingly feel the need for a more explicit and dignified title for his professional work? In short, is it not time that the term Manual Training, never fully expressing the meaning of school handiwork, has now come to be thoroughly inadequate and even misleading?

It is a fact that these same questions have been asked with more or less frequency since constructive work was introduced into American schools, and it may be answered that the futile results of such dissension prove that the term in use is the best that can be obtained. This is undoubtedly the point of view taken by a large number of manual-training workers, and is indeed the view subscribed to by the writer up to the last few years. But it is very evident that during the last few years a fundamental change in our attitude toward the proper content and aim of constructive work has developed, and the question now faces us with new meaning and redoubled force. Not only have we now far greater need for a new designation, but the nature of the point of view into which we are growing would seem to present a thoroughly rational basis from which to derive a term of real significance. The gist of this change of view is the fact that we are rapidly leaving behind the purely disciplinary thought of manual training. As long as this idea formed the cornerstone of our creed, as long as constructive work represented in our minds simply an instrument to train the mental powers through the hand, manual training constituted at least a workable and fairly suggestive title. While we retained this conception of our work it is not to be wondered at that such terms as psycho-manual, manu-mental, and hand and eye training have found supporters. Such terms, however, are simply more awkward designations of precisely the idea implied in the more usual phrase, and common sense has instinctively rejected these in favor of the simpler expression.

But now that we not only realize that our old attitude toward the disciplinary value of constructive work is psychologically indefensible, in other words, that there is no such thing as a training of general

powers through special exercises, but at the same time are beginning to perceive the immense content meaning of our field, the whole question assumes a different aspect.

It is no longer merely a question of improving an indefinite title, but of replacing one that is inappropriate and incorrect in its implication. The old term is now not only vague, it has become misleading as an indication of the aim and character of our work.

Now that we are beginning to see that the scope of this work is nothing short of the elements of the industries fundamental to modern civilization, such a term becomes at once a stumbling block and a source of weakness.

The whole matter would not be of such importance were it not for its bearing upon the nature and spirit of the work projected in the schools and its future trend. We are facing the question now as we have been for the past few years, as to whether we shall continue to devote our attention to miscellaneous and more or less meaningless projects, or whether we shall seek in an orderly way to develop an insight into the basic industries of our time and a knowledge of some of the steps through which these have reached their present form. A term like manual training tends to keep us at paper folding and chisel exercises. A term that indicated clearly a definite field of subject matter would do much to direct the line of advance, clear our minds and economize our efforts.

Behind every other subject in the curriculum is a body of ideas of fundamental meaning and importance. The industrial arts which stand for one of the most vital and important phases of modern civilization, throw away their claim to recognition by masquerading under a term at once inappropriate and misleading. Such a term is both an obstacle to the full and free development of our work and to its recognition and appreciation on the part of the public.

Shall we continue to carry this incubus of an unsuitable name, or shall we do what we can to substitute a better?

In the hope of enlisting consideration and discussion, the writer proposes the term suggested above: Industrial Art. Such a term indicates a definite field of subject matter. The word Art is inclusive of both the technical and aesthetic elements, and the qualifying word points specifically and comprehensively to the special field of our material.

The writer sincerely hopes that a vigorous discussion of this question may ensue. It is a matter that will trouble us until it is settled. Why not grapple with it now? —*R.*

An Imaginary Antagonism. One not infrequently hears the words "artistic" and "mechanical" employed in fashion which appears to intimate that they are mutually antagonistic. Such intimation is unfortunate. No real antagonism exists between them; they are not antithetical terms. Work mechanically done may be artistic, work freely done may be inartistic—subtle differences often distinguish higher from lower forms of art. Work artistic is primarily free in expression, no matter how mechanical in execution. In all school work, freedom, not mechanism, of production is to be demanded. Our joints and exercises may be laid out with the greatest care, yet the "free" hand is required in their execution. Mechanism, even automatism, is not to be sought. When it arises it spells arrest of development.

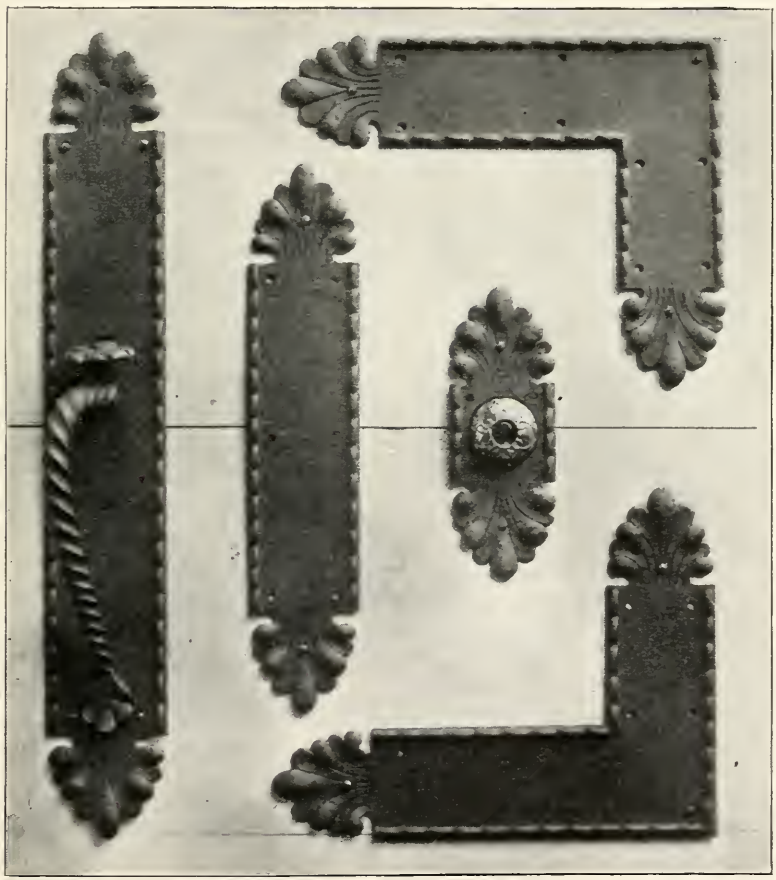
A point, more really at issue, is the relation borne by Decoration to Construction. Here are two elements that may or may not be united in school work as in other work. They are not, however, to be considered as terms synonymous with "artistic" and "mechanical." Decoration does not necessarily make a thing artistic nor does the absence of decoration make it inartistic. Likewise construction is not to be thought of merely as a mechanical process. Mechanically made forms are not of necessity, of good construction, indeed may be typical of the very worst.

The best construction necessarily includes artistic elements, i. e. in addition to soundness of structure, propriety of material, suitability to purpose, good proportion and good relationships must also be present. Whether such construction shall later be adorned with decoration depends upon the nature of the form constructed. One of the first problems of the manual-arts teacher is to find forms which may with propriety be decorated, that lessons in applied design may find actual application. These forms once found, the teacher is prepared to add to artistic construction, artistic decoration. —*H.*

The more the arts are called fads, the better for them — their advocates are thus the more stimulated to make them essentials.

A State militant mayhap — but not an Art militant. Art is the spirit of pleasure in labor; it can make its way only through love and understanding. Preach this!

The tailpieces used in this issue are selected from photographs collected during the summer. The stool on page 7 was made by a student at Bradley Polytechnic Institute. The hammock support on page 19 and the copper and black iron pieces on page 52 were designed by George G. Greene of Moorhead, Minn., and George Les Veconte of St. Cloud, Minn.. to illustrate the character of metalwork that is practicable in the upper grammar grades. The fire tools on page 25, the set of door hardware on page 35 and the pulls on page 58 were forged by the inmates of the Illinois State Reformatory at Pontiac under the direction of Thomas Googerty, the instructor in forging.



ASSOCIATIONS

EASTERN MANUAL TRAINING ASSOCIATION.

The eleventh annual convention of the Eastern Manual Training Association was opened by the president, Mr. Louis Rouillion, at the School of Industrial Art, Philadelphia, July 6th, 1904. An address of welcome was delivered by the Hon. John Weaver, mayor of the city, who took occasion to note the growing popularity of manual training in the schools. He considered the man who graduates from the manual-training school better fitted for the battle of life than the man who graduates from the school that has no manual training. The world wants men who can do things. A most cordial welcome was extended to the Association.

The president, in thanking Mayor Weaver for the encouragement of his words, referred to the important part taken by the city of Philadelphia in the history of the manual-training movement.

The meeting was then addressed by Charles H. Edmunds, of the Central Manual Training School, who commended the enthusiasm of the members of the Association in renouncing the pleasures of the lakes or the sea-shore for the work of the convention. He believed their zeal was born of the success of their labors in turning out men well equipped for the duties of life. It seemed an amazing thing that the public had been so slow to appropriate funds for the maintenance of manual training, but the idea once having gained recognition, had come to stay. The manual-training school is giving boys a ready answer to the question "What can you do?" Statistics taken at the Eastern Penitentiary showed that of some six hundred inmates nearly all had attended school somewhere, but only five were mechanics. In the solution of the great social problem manual training offers ready assistance. Give a boy power to do something and he will heed the laws "Thou shalt not steal; Thou shalt not covet; Thou shalt do no murder." because he can profit, not by the appropriation of that to which he has no title, but by the securing of that which he can create by a skilled hand attached to a trained mind.

William L. Price, of the Rose Valley Shops, spoke on

THE ATTITUDE OF MANUAL TRAINING TO THE ARTS AND CRAFTS.

Beginning with the origin of things Mr. Price pointed out that, from the necessity of working with his hands, man had gained two things—joy in the sense of creation and development through his work. We are apt to make the mistake of thinking that if we can get wealth enough we can go out into the markets and buy development. The truth is that development comes only through work. The manual training school is good as a preparation for after life, but it fits the burglar for his work as well as the professional man for his. We must look beyond the preparation and carry the school into life. That is a poor kind of industry where the operative stands all day at the machine doing monotonous work. "You cannot get character," said the speaker, "as the by-product of the shoddy mill." We teach people how to design beautifully and then get them jobs to do the very reverse. They dare

not come back and show their designs. The demand is not for the best but for the purely commercial. There are to-day two thousand arts-and-crafts associations in the United States. They exist as a protest against prevailing industrial conditions. This movement and the manual-training movement should be mutually helpful. In the hands of manual-training teachers lies a power out of all proportion to their numbers. They should impress upon their pupils that to be worth while in the world they must be creators. If the arts-and-crafts movement and the manual-training movement go hand in hand they can revolutionize the world.

A paper by Gustaf Larsson, of the Sloyd Training School, Boston, who was unable to attend the meeting, was read by G. W. Norton.

THE ADAPTATION OF THE SLOYD METHOD TO EXISTING CONDITIONS.

Mr. Larsson believed that if the principles of the American manual-training schools were brought into conformity with the views of the leading educational authorities, there would be many changes in the methods now pursued. Sloyd princi, ples rest upon the laws of natural development, and therefore should not be *adapted*- but *adopted*. The principles of sloyd are briefly as follows: (1) Teachers must be professionally trained; (2) the teaching must be systematic, and, as far as possible, individual; (3) in selecting work physical development should be kept in mind; (4) the things made should represent the worker's own effort; (5) exercises should be progressive and applied on objects useful to the worker; (6) the course should include freehand work as well as objects which must be made accurate by the use of testing tools; (7) special importance should be attached to the love af good work for its own sake, and the development of the individual. The tool work in sloyd is based on a progressive course of exercises adapted to the growing powers of the child. These are designed to improve his general physical condition. increase his power of clear thinking, stimulate right feelings, strengthen the will, train the eye, develop judgment, a love of excellence, contempt for shams, and to implant self-respect. To this end an unalterable course of models is not needed and is not used. Changes in the models are constantly taking place in progressive sloyd schools (without changing the sequence of exercises) in order to adapt the products to local and individual conditions. Sloyd methods aim at the development in the worker of that joy in his work which President Eliot declares to be "a pathetic need in American industries."

In discussing this paper, Mr. Norton said he did not think the author had gone deep enough in stating the underlying principles of manual training. He believed that manual training should take its place in the curriculum as a factor in the general development of the pupil. With regard to the sloyd course of work, the idea that the models do not appeal to the interests of the child is a misconception. This the speaker stated from experience. One of the sloyd principles which Mr. Norton thought was not sufficiently appreciated was that of a regular progression of difficulty in the work, adding the unknown to the known.

In answer to a question Mr. Norton stated that the only sloyd model which had been objected to by pupils in his experience was a tool handle, which the boys found no use for, and which was difficult to make. He had never asked boys to make a scoop, but had found them interested in making the spoon.

Paul Kreuzpointner said he had been struck by the remark made by Mr. Price regarding the difficulty of getting thoroughly trained workmen. He had himself had

a similar experience. Upon applying to the foreman of the labor department of the Pennsylvania Railroad for two trained men, he had been met with the reply, "We have no good men. We have men with legs and arms, but without brains." If we have reached this point in our industrial development how are we to preserve the higher civilization? The answer to this question Mr. Kreuzpointner believed to lie largely with the manual-training teacher. We must try to create an impression on those who have nothing but arms and legs—train them to appreciate neatness and cleanliness about the home and its environment, to understand what is beautiful, give them museums, and in every way endeavor to make their minds receptive, and little by little we may reach the ideal set forth in the papers we have heard.

Robert C. Bates expressed a high opinion of the sloyd system, and of Mr. Larsson's work, but was not in favor of enforcing strict adherance to any system. "The individual teacher," said Mr. Bates, "well trained, energetic, thoroughly conscious of the possibilities within himself, can do far more in a community for manual training than any system." The virtue of manual training is that it supplies to the boy or girl a means of self-expression which many of the other school subjects fail to do.

At the opening of the afternoon session Louis A. Bacon, Supervisor of Manual Training, Indianapolis, presented a paper on

SOME WAYS AND MEANS AT INDIANAPOLIS.

Special prominence was given to the correlation and art phases of the work. The careful manipulation of tools was regarded as incidental rather than fundamental. The attempt to produce artistic effects had been pursued chiefly along three lines: color, outline design, and decoration. In designing an object pupils are allowed individual choice in determining size, relation of parts and form of outline. Good designs are shown as a help to the pupils. It is not possible in all cases to get both originality and excellence of design, but to sacrifice all consideration of beauty to strict originality is harmful to the pupil rather than otherwise. Decoration is limited to work with the grooving tool and the application of designs in color.

With regard to correlation in the work, Mr. Bacon did not believe in placing too much emphasis upon it to the exclusion of other considerations, but there could be no doubt that work in some way related to other lines upon which the pupil is working is most interesting and effective. One class, during the reading of Ivanhoe, had made a medieval castle, with moat, bridge, towers, etc. Concrete was the material used, wooden moulds being employed to form the walls.

In the fifth and sixth grades manual work is done in the regular classroom with the knife and hammer. Here a blue-print frame was made and used by the pupils to make prints of spring flowers, etc. A portfolio was then made to contain the studies Other problems which had proved to be of special interest were a bird bird house and a bridge of bent iron.

MANUAL TRAINING IN THE CLASSROOM.

An interesting paper on this subject was read by Eli Pickwick, Jr., Supervisor of Manual Training, Newark. Some of the factors affecting the determination of the kinds of work to be done by the regular teacher were enumerated as follows: local conditions, special needs, nature of material most accessible, attitude of teacher, relation of course of study to the child. As a result of a recent experiment in New-

ark to determine the best kind of manual training for those grades between the kindergarten and the fifth, some work in paper and cardboard was undertaken; this was supplemented by raffia and reed. Tools, such as rules, scissors, compasses, etc., are kept in portable cases—one case for each grade. Fifth and sixth-grade tools are contained in wooden trays, which, when not in use, are kept in a suitable cabinet which is accessible to all classes. Instructions for new work are given by the supervisor to the teaching staff, who are required to make each article before it is made by the pupils.

A manual-training class for teachers was opened, the number being limited to thirty-five and the attendance voluntary, but a change was rendered necessary by the application of more than four times the prescribed number. Manual training in the primary grades is now carried on in two-thirds of the schools of Newark. Teachers generally try to make the work fit their classroom conditions and correlate with other school work. In each grade some work in applied design is given. One teacher had developed enthusiasm in the work in February by introducing the making of valentines; in another school a doll's house had been made and furnished; in another problems in elementary physics had been introduced in a fourth grade class with great success.

A paper by Geo. F. Stahl, on "Shop Work in the New York Public Schools," will appear in full in a future issue.

In the course of some remarks with reference to the papers just read, H. W. Hetzel said he had been interested in observing the application of the social idea. The value of communal work had been recognized in the establishment of school gardens in Philadelphia. Agriculture is the most fundamental occupation, and always arouses the enthusiasm of the worker.

A. W. Garritt called attention to the effect produced upon teachers by the pursuit of manual training as conducted in New York City. The time was when mechanical skill was the one qualification demanded in the teacher; now he is required to be an educator and to regard his special subject in its right relation to other subjects. To this end it is necessary, not only that he shall have had correct training in college or normal school, but also that he shall have opportunity in his regular work to express his own ideas and use his ingenuity in correlating his work with that of other departments. Such opportunity is given in the New York city system. Each instructor is required to design at least five new models each term, and also to prepare a set of communal models which shall relate his work to science or nature study. Teachers are also called upon from time to time to suggest other changes in the course. Thus the work is made interesting and stimulating to the teacher.

Albert B. Entwisle remarked that all the papers thus far seemed to treat much of originality. It is difficult to obtain originality in a subject which the pupil knows nothing about. Children go to school to be instructed. They are not allowed to follow their own inclinations in other subjects, such as arithmetic. We should be careful about leaving too much to the child.

Mr. Stahl pointed out that in most school subjects, even in arithmetic, much is left to the pupil to work out for himself after a method. So we expect the boy to work out his problem in wood after a method.

Mr. Buxton had observed during the last two or three years a growing tendency towards getting as much content into manual training as we have in history, geo-

graphy and other subjects. One of the prominent aims of education to-day is the acquaintance of the pupil with his environment. Through manual training he should learn something of the great field of industry—the materials used, the processes involved, etc.—and along with this content he will receive all the training he would get in unrelated lines of work.

Regarding the practical value of manual training, C. B. Connelley held that much depends upon environment. Manufacturers in Pittsburg allow eighteen months on an apprenticeship of four years to graduates of manual training schools. Each year the Manufacturers' Association of Pittsburg asks for a list of names of graduates. This training is valuable whether the boy goes to work or goes to the technical high school.

After some further discussion the meeting adjourned.

SECOND DAY'S PROCEEDINGS.

The morning session was devoted to the discussion of Domestic Science and Art. Miss Helen Kinne, Director of Domestic Science, Teachers' College, who presided during the session, made an eloquent appeal to the men of the Association for their interest and co-operation. The women engaged in these lines of work had felt that they were struggling alone. A subject which is in thousands of schools and employs thousands of teachers is one towards which all supervisors and principals should have an intelligent attitude, for or against.

Miss Kinne's paper on "The Three Values of Domestic Science and Art in the Schools" is reserved for a future issue.

THE APPLICATION OF DOMESTIC SCIENCE IN THE HOUSEHOLD.

A most interesting paper on this subject, by Miss Mary D. Chambers, was largely descriptive of a course in cooking given at the preparatory school of Decatur College. Next to training in efficiency, the aim of making a correlation point for other studies and enforcing their application in the common affairs of life was kept most prominently in view. Practice in English is given in writing short essays on the properties of food materials, etc. Number work is employed in calculating the percentages of chemical constituents in given foods, and in other ways. Physiology lends itself easily to application, as in studying the components of the body, with a view of determining the proper kinds of food, the process of digestion, etc. In botany the composition and structure of the vegetable foods forms the basis of broad application. Bacteriology is employed in the study of fermentation and sterilization. In the application of physics the field is very broad, as in the method of applying heat to food, conducting properties of various media, dry or moist heat, etc. Chemistry also finds wide application in classes sufficiently advanced. Examples of the application of science in laundry work, house work and home sanitation were also given. Miss Chambers concludes that it seems by no means too much to say that not only does the application of science vivify the subject of home economy, but that all tributary subjects are vitalized by such application, and the student gains a new appreciation of the value of such subjects as a preparation for life.

THE SOCIAL VALUE OF DOMESTIC SCIENCE.

Speaking on this topic, Mrs. A. P. Norton enumerated the following among the social values: the control of environment; the power of initiative and feeling of re-

sponsibility; the appreciation of value; the power to distinguish between essentials and non-essentials; the economic use of materials; the right expenditure of time and money; the appreciation of labor and the dignity of labor. Classes of high-school boys who had taken instruction in cooking had testified with enthusiasm to the feeling of independence received from it. Home work deals with the economics of consumption, as well as of production. A seventh-grade class desiring to give a luncheon to their parents were told that they must provide their own materials. This they did by making jelly and selling it. The adaptation of things to their proper use was studied in the problem of furnishing a house. In grinding corn for their own use the children learn to appreciate labor, and they learn something of the dignity of labor from the fact that all the work is done in the school room. Many examples are to be found of the beneficial effect on the home derived from the teaching of domestic science. A saloon keeper had said that nothing had hurt his trade like the cooking in the public schools. Domestic science also greatly enhances the social life of the school.

Miss Wilson made the following good point in defense of cooking as manual training: "When I began to teach I made a special point that what I had to teach about was food; but soon I began to see that the children were learning something else—something that I did not know I was teaching. I noticed that they could cut a pattern without cutting it in the desk; they could scrub a desk without also having the floor to scrub. They were gaining in co-ordination."

Miss McDermott considered that domestic art and science should be recognized as branches of manual training, Many different kinds of work are done, and much of it requires a high degree of muscular control. The social value of house work was illustrated by the story of four college-bred young ladies who had influenced the attitude of their neighborhood toward work by scrubbing their own door-step.

Clifford B. Connelley regarded the excellent papers just read as having clearly demonstrated the value of domestic science and art as school subjects. Training in efficiency cannot be too strongly emphasized; the value of doing should be measured not by the product, but by the effort and the training involved. With reference to applied science, the speaker believed that in days gone by the average housewife had a tolerably good training through her experience in the production of materials for food and clothing, cooking, the making and care of garments, housekeeping, etc.; while the women of to-day are in comparative ignorance of such matters. Modern conditions had deprived girls of the opportunity of learning the domestic arts in the home, and we should give them the opportunity in the school. Regarding these subjects in their social aspects, Mr. Connelley said there could be no doubt of their value: "Our nation needs sturdy, robust citizens, with sound morals, and the food one eats exerts more influence upon physical prosperity than any other thing over which we have control."

Dr. Edwin R. Houston said that Oliver Wendell Holmes had divided mankind into two classes—the arithmetical, who know how to do things, and the algebraic (the smaller class), who not only know how to do things, but why they do them. True manual training should be of the kind which puts the learner into the latter class. The highest phase of science is the practical—that which puts things into cold material and makes them work.

Paul Kreuzpointner here conveyed to the Association the greetings of Dr. Edward Brooks, Superintendent of Schools of Philadelphia. Dr. Brooks had signified

his intention of doing everything in his power to introduce manual training into the public schools of the city.

The next address was delivered by Wm. A. Baldwin, Principal of the State Normal School, Hyannis, Mass., whose subject was

INDUSTRIAL-SOCIAL EDUCATION FOR THE PRIMARY AND GRAMMAR SCHOOL GRADES.

One purpose of education, said Mr. Baldwin, is good citizenship—that boys and girls shall learn to earn their living and become social factors for good in the community. Then they should learn to be reasonable, to appreciate the things of life at their true value, to adapt themselves to their environment, and to be of service to others. Most successful people have become what they are through industrial and social activities. So the industrial and social activities should form the basis of our school work. Other subjects should grow out of these. Schools probably originated to supply a demand for such knowledge as was needed in trade, and this developed into "the three Rs." Meanwhile children got the rest of their education in the home, the field and the shop. The New England home gives the best suggestion as to what manual training should be. At Hyannis the children are first taught to work in the garden. Many other kinds of work are done, but the garden furnishes the basis for drawing and color work, language, reading and practically all subjects taught. The work fits the local environment at Hyannis. The child's growing knowledge of everything should relate to his home—in geography, history, and whatever he studies. There is still in our schools too much teaching of words not based on experience. It is a mistake to base the work of the school on the American Indian or the man of the stone age. At the Hyannis Normal School the children are taught home activities. In the first and second grades this takes the form of play; in the intermediate grades they have real household occupations, but with furnishings to suit the size of the children; in the grammar grades the same activities are repeated, but this time with furniture, dishes, etc., just as used in the home. It is not the purpose of the school to supplant the home and the church—these have their own work to do just the same as ever—but we want the home to be better and purer, and to build up the community through the home.

Mr. Kreuzpointner desired to call attention to a lesson we may learn from foreign competition. He had gathered from foreign engineers who come here to study our industries, that they have little fear of American competition, chiefly because our workmen have not the manual skill nor the insight into the relation of their work to the conditions of life in their country, which is to be found among foreign workmen. We should endeavor to cultivate the moral and esthetic sense of the people and arouse them to a greater interest in the every-day work which furnishes bread and butter. Civilization advances rapidly in this country, so that many things which have been learned slowly, by an evolutionary process, in the older countries, must be learned here by a quicker and more systematic method. We therefore look to the schools to supply the need, and especially to the teaching of such branches as manual training and domestic science.

Mr. Powell believed that educational ideas are changing. The time was when it was thought not very respectable to do manual work. Now we are beginning to feel that the honorable way to get a living is to earn it by the sweat of one's brow —not by the sweat of other men's brows. The "working class" should include all people who do anything of service to mankind. Mr. Powell then described the work

and aims of the Philadelphia Vacant Lots Cultivation Association. Vacant lot gardens had been started as a means of helping the unemployed, and had been in operation for some seven years. Many people are now making a good living from these quarter-acre or half-acre gardens. This year the board of education has inaugurated school gardens, in which something like a thousand children are being trained.

In the absence of Frank A. Parsons, whose name appears on the program, but who was unable to attend, the time was devoted to the reading of a number of extracts bearing upon manual training, from the report of the Mosely Educational Commission. President Rouillion, who had compiled these extracts, said: "I am convinced by a somewhat careful reading of these reports, that we are in the hands of friends, pleased to note and applaud that which they found worthy of approval, but who dealt most kindly and charitably with that which they might be justified in condemning in stronger terms than they made use of."

BUSINESS MEETING.

Amendments to the constitution were made to the following effect: That the secretaryship be made a permanent office and that the secretary receive a salary; that the chairman of each Local Branch be made a member of the Executive Committee.

A vote of thanks was tendered to the authorities of Drexel Institute, Girard College and the School of Industrial Art, to the Mayor of the City, and to the Local Branch for many courtesies shown to the Association.

A letter from Dr. James P. Haney was read, recommending the compilation by the Association of a list of all manual training schools and teachers in the United States. A committee was appointed to undertake the work.

The following officers were then elected for the ensuing year: President, Clifford B. Connelley; Vice President, Eli Pickwick, Jr.; Secretary, Henry W. Hetzel; Treasurer, Wm. F. Vroom; members of Executive Committee, Thelwell R. Coggeshall, Miss Helen Kinne and Louis Bacon. It was decided by a vote of the meeting that the next annual conference should be held at Newark, N. J. This brought to a close a series of meetings which, in point of interest and promise for the future, were second to none in the history of the Associatlon. WILLIAM F. VROOM.

NATIONAL EDUCATIONAL ASSOCIATION.

The forty-third annual convention of the National Educational Association was unique in that it was merely a small part of a greater gathering, the Louisana Purchase Exposition. At any other time St. Louis would have been more impressed with the greatness of the Association, but at no other time could she have offered such an educational feast, for what is the Fair but a great museum for the education of the people?

At such a time one might expect to find small audiences to listen to pedagogical discussions, but such was not the case. The attendance was good throughout the Convention, papers were carefully prepared and the volume of proceedings will be one of the best ever published.

The first session of the Department of Manual Training was held Wednesday, June 29, in the assembly hall of the Agricultural Building. President Chamberlain welcomed the audience in a few appropriate words and then introduced as the first

speaker Wilbur S. Jackman, dean of the Elementary School of the University of Chicago, who spoke on

"THE CONSTRUCTIVE IDEA IN THE ELEMENTARY SCHOOL."

Mr. Jackman said that the conitructive idea in education has been too largely considered from the standpoint of discipline and too little from the actual value of the external output. He attributed this to a fear that the result might be skill in trade. "The constructive idea," he said, "is working itself out in accordance with two general principles: first, there must be a recognition of a greater variety in the forms of work; and second, there must be a greater emphasis on the value of the external product. Under these two principles it is developing itself in two general directions: First, it includes such work as bears at once upon the present social and economic conditions, and it deals with materials from the child's own surroundings. Second, it appears in play, mainly in an attempt to illustrate stories that they read or that they have been told. One of these should not be set over against the other. Each has its place and it should be duly provided for. Too great emphasis, however, is being placed upon the latter. It is childish, strictly primative and quickly over with. The former includes woodwork, sewing, clay modeling, cooking, printing und book-binding. The latter includes the construction of models of primitive dwellings, primitive cooking, raffia, some pottery, etc., which do not result in products that have an actual value for the pupils. It is almost pathetic to see how teachers wax enthusiastic over these transient and trivial aspects of the constructive idea but remain cold and indifferent to those aspects which when properly worked out mean so much in every way to human life."

Mr. Jackman's point of view, as indicated in the above quotation, attracted the attention of many who were interested in the lower grade problem.

The second paper was on "Manual Training in Sweden as Shown by the Exhibits," presented by Carl Lidman of the Swedish Commission. Mr. Lidman, in a very interesting way gave us a valuable exposition of Swedish sloyd. He showed it as a much broader subject than woodworking. Besides discussing the principles of the Nääs system he spoke of the cardboard and the metal sloyd of the Stockholm common schools, which are based on the same principles. He also called attention to the girls' sloyd—knitting, sewing and plain dressmaking taught in the common schools and art embroidery taught in the secondary schools.

TYPICAL EXHIBITS.

The remainder of the session was given to five explanations of typical exhibits shown in the Education building. These were intended to help visitors in their study of the exhibits. Miss Mary B. Hyde of Teachers College, New York City, stated that her exhibit illustrated how the handwork for the lower grades may be connected with design. In some detail she showed how at Teachers College design is taughf in weaving, basketry, pottery, bent iron work, sheet copper work and woodworking. She would have "art in handwork," not "art and handwork."

Miss Ella V. Dobbs of Helena, Montana, spoka of the Pacific Coast exhibits. She pleaded for more definiteness in purpose, more vital relationship between handwork and headwork, and pointed out the danger of placing too much emphasis upon what is called "creative work." She believed that where one is born with qualities for leadership there are apt to be ten who will do well if they make good followers, and she would have them follow good examples. "Is it not possible to build a

course of study in manual training which shall cover a most definite series of fundamental principles, which shall retain the best of the many good things comprehended in the term sloyd and at the same time be so flexible that it will allow full play for the creative powers of the ingenious boy, awaken and develop a true sense of art, hold in check the impulses of him whose interest is here today and there tomorrow, while it secures at least mechanical proficieucy from him whose creative instincts lie too deep for expression?"

Louis A. Bacon spoke for the exhibit of the Indianapolis public schools and Clarence E. Meleney for the exhibit of New York city. Dr. Meleney called especial attention to the "decorated models," which involve drawing, construction and decoration. Each of these possesses a distinct individuality and becomes of great value to its maker.

The exhibit of Bradley Polytechnic Institute was briefly explained by Charles A. Bennett. He thought this exhibit would be of interest to those who are studying the problem of manual training for a general high school, for here one finds that work in the manual arts has become an integral part of a broad high-school curiculum, and that in common with language, mathematics and history, it is required of all students; of some, much, of others, little. He also spoke of the new laboratory course in mathematics, the relationship between art and manual training and the place given to metalworking.

The second session, which was held in the Missouri state building, opened with Charles B. Gilbert's paper on "The Manual Training High-School versus Optional Work in the Regular High School," which we print in full on pages 1 to 7. The discussion of this paper was opened by Dr. C. M. Woodward of St. Louis from whom we quote the following:

DISCUSSION BY PROFESSOR WOODWARD OF WASHINGTON UNIVERSITY, ST. LOUIS.

There seems to be substantial agreement between Mr. Gilbert and myself as to the ends to be secured in organizing manual training in secondary schools. We agree that *some* manual training should enter into the secondary curriculum of every boy (and girl), not for occupational, but for educational ends. Neither of us approves of trade teaching in public secondary schools. Both of us wish to postpone the choice of a course of study with a definite view to an occupation until after the first year of the high school is finished. Perhaps we agree in postponing it still longer.

Both of us are unwilling to deny to any pupil a reasonable demand for a thorough course of manual training. If Mr. Gilbert had had my experience in contact with classical and manual schools he would probably agree with my *a posteriori* conclusions as to segregation. I do not approve of so much talk about "occupational" training in any high school. Everything studied has, or should have value in the occupations of life. Everything taught should be taught thoroughly as though the welfare of every pupil in the class depended upon the teaching and learning being done well. It is worse than poison to lead a boy to feel that what he is studying will be of no value to him in after life; that it is "mere culture". I regard it as extremely unfortunate for a fourteen-year old boy to be allowed to say to his teachers, "I am going to be lawyer, or an electrician, or an engraver, or a grocer, or a journalist, or a machinist, or a gentleman of leisure,—and hence I don't want to study this or that

or the other, because such study will be of no use to me." I have no objection to a boy's fancies. He must have them, but they should not be taken seriously.

There is one point where Mr. Gilbert and I differ: He thinks it a good thing to have a boy, who after a fair trial with a branch of study, has been allowed to omit it, by a proper choice of a course of study, to be in daily contact with another boy whose taste has led to an opposite choice. For example, one takes Greek, the other discriptive geometry; or one elects ancient history and the other mechanic arts. Do they stimulate each other, or do they have a tendency to unsettle and upset each other? I think it best for such students to study apart with all the zeal they can.

I do not approve of the way in which Mr. Gilbert uses the words "majority" and "minority". He assumes that if we have manual-training high schools and literary high schools, the former should receive only a minority and the latter a majority of the students. In fact, he assumes only one manual-training high school in a large city like New York. Why should we not have as many manual-training high schools as will meet the demand? When one school is full to the limit, build another, and so let every one have his wish at a time when that wish means something.

Thus far, after having read Mr. Gilbert's very interesting paper.

It goes without saying that this discussion can apply only to communities where at least two high schools are necessary—say to centers having 25000 or more people. A population of 25000 should have a high school attendance of 1000, which is enough for two schools, 250 boys and 250 girls in each school.

Again, I do not assume that the organization of manual-training high schools would involve the exclusion of all manual training from the other high schools. Boston has manual training in three of its high schools and proposes to have some optional manual training in all its high schools, but this does not interfere with its manual-training high schools properly so-called.

Chicago plans to offer a year's work in manual training in every high school, and at the end of a year to transfer to the manual-training high schools those who wish to take a full course of manual training; and to a classical or commercial school, those who do not wish to continue manual training. I approve the Chicago plan, and heartily commend it to all cities. First, because every high-school pupil should have a chance to develop his executive, mechanical abilities, no matter what his outlook for occupation may be. Second, because it pushes ahead for one year more the date of a final choice of a course of study.

I base my position on several reasons:

1. The expense of complete equipments. Bench work in wood is inexpensive, but lathes and motors and all metalworking tools and appliances are expensive, and when the probable demand of high-school pupils is met, it is wasteful to provide more. If instead of one or more complete outfits, partial ones are provided, the scheme is inadequate. At least half our boys want manual training, and if we are to keep them in school we must give it to them. Abundant experience proves that manual-training high schools hold boys who would otherwise drop out.

2. The weekly program for a manual-training high school cannot be made to fit or co-operate advantageously with the program of a classical school. The manual contingent of classes have double periods in the shop—and they should go with full ranks or there will be lack of economy in teachers.

3. In every school which is well conducted there is systematic correlation between different subjects and co-operation between different teachers, so that one

branch of study is made to illustrate another branch. For example; All the processes of our forging shop, our brazing and soldering shops, are used to illustrate the principles of physics and chemistry. Our geometry, plane and solid, gets uncounted illustrations and applications from "projection", "intersection", and "shadow" drawing. The exercises of the machine shop serve to illustrate the principles of friction, moments, the development of heat, electricity, the action of steam, compressed air. etc. All these illustrations would fall flat and weak upon the ears and eyes of pupils studying Greek instead of shopwork and drawing.

On the other hand, before a class of manual boys whose acquaintance with the traditional fields of study is of necessity limited, all reference to mythology, Greek and Roman history, classical biography, and the writings of Homer, Virgil and Cicero, generally lack force and application. I recall a scholarly and venerable teacher of ethics and political economy who always found engineering students "woefully ignorant of matters which every well educated person ought to know". Had he gone into their technical lectures and into their engineering laboratories, and been put on the rack, he in turn would have been found "woefully ignorant of matters which every well educated person ought to know". When manual and classical students mix in classes, profitable correlation is well nigh impossible.

4. There is a fourth reason why it is not wise to combine closely into one program, with joint exercises in common studies, students like those in a literary school and in a manual-training school. There is in the two schools a difference of atmosphere, of educational tone, noticeable to every careful observer. In the one school the larger proportion of studies are recognized as lying at the very base of future success in business, in industrial work, or in professional life. To the pupils of that school such studies are serious matters, and in the consciousness of their own zeal they look with disapproval, if not with contempt, upon one who confesses that he has no interest in such work beyond passing his final examination.

On the other hand the pupil who is giving his attention to subjects remote from the present time and from modern industrial interests, is prone to pity, if not despise, the boy who is compelled by taste or by circumstances to devote himself to what he calls "bread-and-butter subjects." Thus when brought into intimate relations, instead of inspiring each other to greater zeal. the effect on each side is to lead to suspicions that the books one is reading and the work one is doing is after all of little or no importance. Such a result is unfortunate in every way. I do not say that all boys feel as I have said, but many do, and they give direction to public opinion. The ideal of one school is "culture", which, as Emerson says, is valued not for what it enables one to accomplish, but for what it is supposed to accomplish, in the student himself. The ideal of the other school is practical ability; the power to take hold and do things, useful and remunerative; to control forces and to gain a mastery over materials. (Let me add in parenthesis that this mastery of materials and natural forces is not grined without a great and precious accomplishment in the student himself. There is more than one avenue to culture.)

Every teacher who has had charge of both kinds of schools recognizes and respects this difference in tone and atmosphere, and he prefers not to mix the two kinds of pupils in his classes.

Dr. Gilbert was asked to close the discussion, and made the following statement:

DR. GILBERT'S REPLY TO DR. WOODWARD.

"It is impossible for me to answer all of the points in Doctor Woodward's able and interesting paper, with which I do not agree. His point of view is so radically different from mine that our differences of opinion are fundamental, and there is no common ground on which we could get together.

"The basis of Dr. Woodward's argument is the divislon of society into fixed classes, for which preparation must begin in infancy, before the youth are able on rational grounds to select their own lines of activity and their own places of operation.

"It is quite likely that there are arguments in favor of manual-training high schools stronger than the arguments against it which I have advanced, but they are not those advanced by Doctor Woodward, from my point of view. Indeed, the question as a practical one is almost wholly local. It is unwise to go against traditions and conditions which prevail in any city for the sake of carrying out a pure theory. I know manual-training high schools that are so important factors in the school situation that their distribution would be a local calamity. But my argument was based wholly on the consideration of new conditions, where there are no prejudices and no investments to help determine action.

"Now, what is the substance of Doctor Woodward's objections to manual training in high schools? That students will not be sufficiently well grounded in manual training for class purposes. His argument is for an aristocratic society wholly; mine for a democratic society. I would have manual trainmg taught because of its cultural value for all, and because it is likely to help a very large number to the choice of a livelihood, and not because it sets apart some for a calling already predetermined.

"Doctor Woodward's argument proves too much. One of his objections to manual training in high schools, for instance, is that students taught in the same classes from different courses cannot understand the illustrations of the teacher if they are based upon manual training. Think of it! Even at this period of infancy the line is to be so sharply drawn that the students in the classical course cannot even understand allusions to manual training made by a teacher in a class in English. That out-Germanies Germany, and I maintain that it is wholly undemocratic and most dangerous.

"One of the strong arguments, as I have said, for manual training in high schools is that it brings the young people of all classes together and makes possible better citizenship. Young people who are together for four years, reciting every day together in the same classes, even if they are to a degree differentiated, are more likely to understand one another and to get along together in the world better than those who are separated at the beginning of the high-school course. I do not, myself, believe that the manual training will suffer one whit. I am confident that with an adequate equipment it can be carried on just as thoroughly and just as well as a department in the high school as in a separate manual-training school. And even if it could not, I should still be in favor of the manual training in high schools because of higher grounds. If necessary, I should say less manual trainihg and more democracy. The school life is more important than any subject, even a specialized one, and the school life in our secondary schools must fit our citizens for the larger life of the world.

"Finally, and for all, I shall, as long as I live, be unalterably opposed to any school arrangement which tends to divide our future citizens into classes at this early age."

HOW THE BASEMENT IS UTILIZED AT THE COTTAGE HILL SCHOOL.

The second subject of the session was

WHAT MAY BE DONE IN THE COUNTRY SCHOOLS?

This question was discussed by Alfred Bayliss, state superintendent of public instruction in Illinois. What he said is summarized in the following:

"The poorly housed and indifferently equipped country school, with its eight grades, has no place for the shop, and the teacher, even if prepared, usually feels that he has little time for innovations upon the regular program. The inertia of the country neighborhood is sometimes in the way. Less, therefore, must in equity be expected of the country school, especially in the form of indoor work.

"With outdoor work the case is somewhat different. Through the agency of boys' clubs it has been demonstrated that a good deal can be done. An Illinois superintendent rents six acres of ground, ploughs it and otherwise gets it all ready for the planting. The members of the club plant, cultivate and harvest on a profit sharing plan. Six thousand Illinois boys under the auspices of the State Farmers'

Institute, are carrying on an immense corn growing experiment. They are required to note the kind of soil, number of cultivations, when it was laid by and when gathered, when it tasseled and silked, the ratio of barren stalks, etc., and finally produce samples of the results for expert judges to pass upon with reference to the standards used in judging corn.

CORNER OF EXHIBIT, COTTAGE HILL SCHOOL.

"A young woman, teaching in the country for the very sufficient reason that she had been crowded out of town, in the course of two school years, both short, contrived somehow to have the boys fit up quite a workshop in an unused stall of a near by stable. There was nothing said about the introduction of manual training as a new study, or the project might have failed. They got to thinking that they wanted to make a sled, "for the boys to draw the girls on." It was part of their play. The tools and lumber came from different homes. After the sled followed some shelves for books, whereupon it occured to the head boy, one noon, that a cabinet with a glass door, for their specimens, would be about the right thing. Nature study had not been "introduced." The directors would hardly have stood for that. But some of the geography class had gathered a few fossils from the quarry, there were some sections of the different kinds of wood in the district, and one of the boys had caught, and stuffed the skin of a pretty good sized gar-pike, etc; then just to see if they could get replies, the children had written some letters to other children in distant states. They got them, and, by exchange, many curious things not found in their own neighborhood. They had in this way come to need a cabinet, and so they just set to and made it. There was no thought of "manual training." They just made things they needed.

"Thus manual training broke into one country school. How it disappeared when that teacher moved on is another story."

Some photographs of a country school, three of which are here produced, were exhibited, one of which shows in a convincing way how a good dry basement can be used to advantage as a shop, and even for the forms of work finding their way into some schools under the name of domestic economy.

The last paper of the session was on the progress of education in the South as shown by the exhibits. It was ably presented by Brown Ayres, dean of the academic

COLLECTIONS MADE AT COTTAGE HILL SCHOOL.

department of Tulane University. Professor Brown pointed out that it was hardly fair to judge the progress by the exhibrts, owing to the fact that so many schools were not represented. When speaking of the progress of manual training his tone was decidedly optimistic.

BUSINESS.

At the first session the following committees were appointed: On Nominations, Jesse D. Burke, Patterson, N. J.; Bert M. LeSeuer, Schenectady, N. Y.; Ella V. Dobbs, Helena, Montana. On Resolutions, Frank M. Leavitt, Boston; Cree T. Work, Denton, Texas; Anson W. Smith, Brooklyn, N. Y. At the second session the reports of these committees were adopted, the latter being of the usual complimentary nature, and the former very unusual, yet highly complimentary. Contrary to precedent, the entire board of officers was elected for another year. They are Arthur H. Chamberlain, Pasadena, Cal., president; Charles L. Kirschner, New Haven, Conn., vice-president; Frank M. Leavitt, Boston, secretary. Professor Chamberlain seemed somewhat embarassed but finally accepted in a gracious manner.

There was one other program that was of special interest to many teachers of manual training — that of the Department of Elementary Education when Miss Katherine E. Dopp, of the the University of Chicago, President G. Stanley Hall of Clark University and Dr. L. D. Harvey of Wisconsin discussed "The Natural Activities of Children as Determining the Industries in Early Education. We print Dr. Harvey's paper in full on pages 8 to 13, and regret that it is impossible to present to our readers both of the others at the same time. However, we are aware of the fact that the points of view of the other two speakers are already known to many of our readers. It is evident that the last word has not been said on this subject.

By way of summary it may be said that the interest of manual-training teachers centered on two discussions: First, the discussion of the manual-training high school by two of the strongest men that could have been selected. This discussion went deeper than any previous one we have listeued to, and while it disclosed the fundamental character of some of the differences in theory it also revealed that there is now quite general recognition of the fact that all high-school students should have some manual training, and, best of all, that steps to make this possible are being taken in a least two of our largest cities.

Second, the discussion of the lower grade problem by Miss Dopp, Dr. Hall, Dr. Harvey, Dean Jackman and Miss Dobbs. The subject is a much larger one and the results were much less satisfying, The subject was at least opened on two opposing sides with exceptional vigor, and, so far as Dr. Hall and Dr. Harvey were concerned, with not a little oratorical spice. Why not use the papers read this year as the basis for a discussion next year.

—*B.*

CURRENT ITEMS.

CLINTON S. VAN DEUSEN.

WILLIAM A. BALDWIN, of the State Normal School at Hyannis, Mass., attended and took part in "The Second International Congress for the Development of the Teaching of Drawing", held at Berne, Switzerland, in August. He was sent over by the State Board of Education in response to a request sent to the governor by those having the congress in charge.

THE program committee of the Western Drawing and Manual Training Association held a meeting in Chicago August 19 and 20 and outlined the program for the next meeting, which will be held at the Chicago Art Institute, April 25-28, 1905. With such an ideal meeting place and exhibition rooms, with so many interesting schools and studios to visit, and the rich program it will be possible to make in such a large center, there is every reason to believe that the first meeting of the Association acting under the new constitution will surpass all others in the history of the already noted organization. Miss Lucy Silke, the president of the Association, seems fully aware of the possibilities of the meeting and is organizing her forces early.

THE CARNEGIE TECHNICAL SCHOOLS.

IT will be of interest to our readers to know that the plans for this school are assuming definite shape, and as has been expected, they are on a very elaborate scale. The trustees of the Carnegie Institute of Pittsburg, who were empowered to carry the project into effect, appointed a committee with authority to engage an architect, determine upon a general plan and proceed with the working plans and specifications of such parts of it as they deem necessary. This committee has instituted a competition for the selection of an architect, and a book has been published as a program of the competition. This book shows that the committee and Director Hamerschlag have done a great amount of labor and have carefully worked out the preliminary plans. The design and the architect are to be selected not later than Oct. 22, 1904. The plan of the school as proposed by the committee is as follows:

Group I—Administration.

Div. A	—Offices	7400 [1]
" B	—Faculty, exhibit, reading rooms, etc.	16800
" C	—Main auditorium and lecture rooms	27000
" D	—Club rooms	14500
" E	—Vault and store rooms	6600
" F	—Gymnasium, living quarters for general superintendent of buildings and janitor of Group I	18000

The Director's residence of about fifteen rooms included in this group or in suitable position elsewhere.

[1] The numbers at the right side of the page denote the number of square feet of floor space to be provided for each division.

Group II—School of Applied Science.

Div. A	—Superintendence and general	13000
" B	—General instruction and service	14000
" C	—Machine design and construction	16000
" D	—Structural steel design and construction	12500
" E	—Industrial, metallurgical and electro-chemistry	20500
" F	—Mining practice	12000
" G	—Railroad practice	12100
" H	—Applied electricity	13200
" I	—Steel manufacture	15200
" J	—Clay working and ceramics and the manufacture of glass	17800
" K	—Foundry practice	35300

Group III—School of Apprentices and Journeymen.

Div. A	—Superintendence and general	11300
" B	—General instruction and service	16800
" C	—Carpentry	4000
" D	—Cabinet-making and woodworking	3400
" E	—Pattern-making	8000
" F	—Electrotyping and stereotyping	7400
" G	—Electrical work	7400
" H	—House, fresco and sign painting	10000
" I	—Use of structural steel and iron	7000
" J	—Steam and hot water heating; sheet metal and cornice work,	12800
" K	—Blacksmithing and machine forging	10600
" L	—Plumbing	6400
" M	—Masonry, blicklaying and plastering	9000
" N	—Printing	6400
" O	—Mining machinery	7400
" P	—Stationary steam engineering	4400
" Q	—Foundry and molders' work	6400
" R	—Machinists' work	10000

Group IV—Technical School for Women.

Div. A	—Superintendence and general service	8800
" B	—Professional housekeepers, dressmakers and costume designers	12100
" C	—Librarians and secretaries; bookbinding	10900
" D	—Stenographers, typewriters and bookkeepers	6700
" E	—Leather work aud upholstery; needle work and embroidery,	10200
" F	—Milliners' and dressmakers' assistants, and seamstresses	13200
" G	—Working housekeepers, housemaids and laundresses	8400
" H	—Cooks and waitresses	6400
" I	—General instruction in Group IV	18900

Group V—School of Applied Design.

Div. A	—Superintendence and general	9500
" B	—Interior decoration and design	12000
" C	—Ceramic art	9500

" D—The elements of architecture; stained glass; stone carving.. 7400
" E—Repousse work; glass blowing; leather work 7400
" F—Typographical art 10300
" G—Art needle work; furniture design 11800

Group VI.

Heat light and power service 12000

The School of Applied Science is intended for both day and night classes, training young men over sixteen years of age during periods of two or three years, for such callings as draughtsmen, inspectors, foremen, engineers' assistants, and numerous other positions above those of the skilled mechanic, where intelligence and technical information are more essential than manual dexterity.

The School for Apprentices and Journeymen is adapted especially to night instruction. Technical and theoretical information, with some practical work, will be given to supplement the work during the day at their trades.

The Technical School for Women will have for its principal aim the training of women to earn a livelihood. Both day and evening classes will be held. Some of them short courses of a trade character and others covering a period of about three years, fitting women for positions of considerable responsibility.

The School of Applied Design also provides for day and evening classes, and aims to instruct those who aspire to become skilled workers as well as designers, in the various art industries.

THE PHILADELPHIA BRANCH OF THE EASTERN MANUAL TRAINING ASSOCIATION.

One of the striking features of the recent manual-training convention in Philadelphia was the interest and enthusiasm which the affair excited among the local workers. In making arrangements for the gathering, the local committee thought it well to take advantage of this enthusiasm by taking steps toward the formation of a permanent organization of local manual-training teachers and workers. And it was further decided, almost unanimously, to make this a local branch of the Eastern Manual Training Association, that both organizations may be mutually strengthened. To quote from a recently issued circular, the branch has been formed "with a view toward interesting teachers and educational workers of Philadelphia and vicinity in the importance and progress of manual training, at the same time providing a means of discussion of matters of interest to the profession. Meetings are held monthly and the annual dues are one dollar and fifty cents; one dollar of which secures membership in the Association, and fifty cents entitles the member to the privileges of the local branch." At the time of the convention there were about forty-five paid-up memberships to commence the career of the new organization. The officers elected for the year are: President, Thellwell R. Coggeshall, Supt. Mechanical Dept. Girard College; Vice President, Albert B. Entwisle, Central Manual Training School; Secretary-Treasurer, Henry W. Hetzel, Supt. B'rith Manual Training School.

In order that the example of Philadelphia may be followed by other large manual-training centers, an amendment was made to the constitution of the Association at the business meeting of the convention, encouraging the formation of such local branches, and with the hope that the work of the Association may be better brought to the attention of manual-training workers all over the country.—H. W. HETZEL.

THE city of Boston is considering a plan for a handicraft high school. This is something new. It is being advocated by J. Frederick Hopkins, director of drawing, and Dr. James F. McDonald, chairman of the committee on drawing, end senior members of the school committee. The plan, which seems to be meeting with favor, does not encroach upon the field now occupied by the Mechanic Arts High School, but takes the unoccupied territory of the applied arts. Woven and printed floor and wall coverings, leaded glass work, sculpture, terra cotta work, pottery, artistic printing, book-binding, leather work, and metal work are mentioned in the list of arts and crafts to be taught in this new school. It seems to be the outcome of Mr. Hopkins' success in teaching applied art in some of the high schools of Boston.

THE Hebrew Technical Institute of New York City sent a class of twenty-four boys, under the charge of two teachers, to the St. Louis Exposition, stopping at Niagara Falls en route going, and at Washington on the return trip. The expenses of the trip are paid by a friend of the Institute.

Owing to the present crowded condition of this school and the large number of applications for admission the board of directors has decided to add another story to the building. A class in instrument making will be inaugurated and another teacher added to the present force.

AT a recent exhibit of manual-training work held in Montclair, N. J., many things were shown that illustrate the high character of the work carried on there. Practically a week was devoted to this exhibit and it was very largely attended. One was especially impressed by the work in clay as carried on by Cheshire L. Boone in the fourth grade. Clay is used here as a medium for modeling familiar forms of plant, animal and human life. Mr. Boone has gone much further in his study of pottery as an industry. The children in one school have made pottery of native clay, built a kiln themselves and fired their pottery, bringing their own fuel and raising the heat to such a degree that the pottery was actually vitrified. Artistic flower pots and tiles have been special objects of design and production. The noticeable fact in the lower-grade work is the wide tendency toward correlation with regular school work and toward a utilization of representative, artistic and constructive handwork. In the upper grades, in charge of Walter Avery Cleveland, the stereotyped model is disappearing and giving place to articles of real interest to their makers, so that it is becoming possible to have them both useful and beautiful, because they are the result of spontaneous expression. Mr. Cleveland has also succeeded admirably in carrying out a few excellent mechanical devices, including a potter's wheel for the school, various forms of derricks and a good part of a miniature railway system, including tracks, switches, a swing bridge, turn-table, round house, signal system, cars, etc. In the other schools the work under Miss Vincent has attained a high standard of excellence. Pieces of considerable size and no little value are a distinguishing feature of the courses. This is made possible by the boys paying extra for such special material.

MANUAL TRAINING formed a large part of the work done in the Detroit vacation schools and playgrounds during the summer months. This was a new departure in the Detroit playground work and was introduced to attract older children than it has heretofore been possible to interest by play and athletic instruction alone. It proved to be very effective in increasing the attendance, and upwards of 5000 finished articles were made. The work consisted of sloyd, basket-making and sewing. Children were given much latitude in choice of work, and in the bench-work, especially,

many boys had an opportunity to work out ideas of their own and develop inventive talents that are not always practical in the regular manual-training classes of the school year. Model-yacht building was the choice of most of the advanced boys, and in E. S. Holmes, one of Mr. Trybom's assistants in the public-school manual-training department, the classes had a teacher who is an expert model-yacht builder and sailor. These yachts were constructed on scientific principles, and in connection with the annual field-day for athletic contests, a yacht race was held and prizes awarded to the most successful sailor.

A very creditable exhibition was held of all the manual work of the vacation schools, which attracted many favorable comments from the press and public and gave vacation manual training an impulse that promises a further growth of this valuable work. The vacation school work as a whole was in charge of Homer T. Lane, one of the regular manual-training teachers.

Mr. C. S. Hammock, of the Northern State Normal and Industrial School, Aberdeen, South Dakota, has gone to Cedar Falls, Iowa, to take charge of the manual training in the State Normal School—the center of pedagogical influence in Iowa. Mr. Hammock brings to this position recognized ability as a teacher of art as well as experience in teaching manual training.

Geo. G. Greene has resigned his position as director of manual training in the St. Cloud (Minn.) Normal School to accept a similar position in the Moorhead Normal School, where the salary is larger. Mr. George LesVeconte, of the St. Cloud public schools, takes Mr. Greene's place at the St. Cloud Normal.

Whitewater, Wisconsin, is to have manual training in its public schools. An equipment is being purchased by Chas. F. Hill, principal of one of the grammar schools.

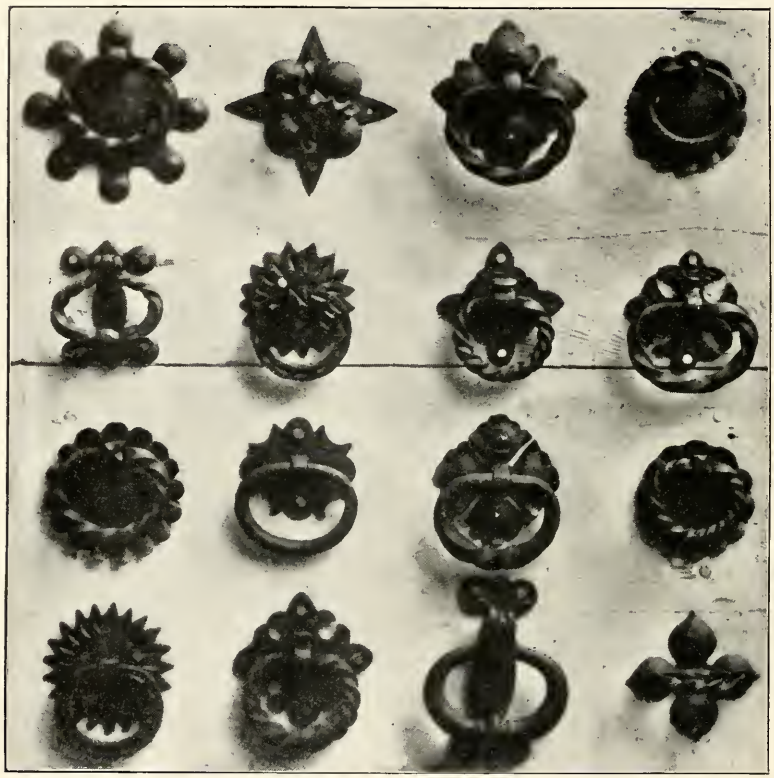
The following quotation from the platform of the democrats of Texas shows a progressive spirit and is probably the result of the good work done by manual-training teachers already in the state: "We commend the legislature and many of our city governments for the inauguration of industrial education, and the democracy will continue to foster, encourage and extend the same."

ILLINOIS.

The executive committee of the Illinois Manual Arts Association held a meeting in Peoria, on the 26th of August. Plans for the winter meeting were discussed. This meeting will be held at Bradley Polytechnic Institute on Friday and Saturday, Feb. 17 and 18, 1905. A feature of this meeting is expected to be a report on manual training for rural schools, which is being prepared by a committe of the Association consisting of Luther A. Hatch, of DeKalb, chairman; Oscar L. McMurray, Chicago; and A. P. Laughlin, of LaGrange. The executive committee decided that no attempt be made to procure a large exhibit at the coming meeting, but each member of the Association will be encouraged to bring with him any school work he considers or general interest or especially suggestive.

E. H. Sheldon has resigned his position as director of manual training in Evanston so that he may give his full time to the growing manufacturing business he has established. For several years Mr. Sheldon was the teacher of woodworking at the Chicago Manual Training School, from which place he was called to Evanston. A strong characteristic of his work was brought out clearly in the recent ex-

hibit at Evanston where an exceptionally fine collection of furniture was shown. This had all been made by pupils of the grammar grades.



BRADLEY POLYTECHNIC INSTITUTE has reason to be gratified at the results of the Summer School of Manual Training. Offering advanced courses during the summer was in the nature of an experiment, but the results in attendance, interest, and quality of the student body fully justified the action. Among the fifty-five students were six college graduates, twenty holding normal-school certificates, two superintendents of public school systems, five principals of grammar schools, twenty-three supervisors or special teachers of manual training or drawing, and eleven grade teachers. Students came from thirteen states, from Colorado to Pennsylvania, and Minnesota and Dakota, to Texas and South Carolina. Two Canadian provinces, Ontario and Nova Scotia, were represented.

REVIEWS.

Elementary Woodworking. By Edwin W. Foster. Ginn & Company, Boston, 1904. 7½×5½ in.; pp. 133+VIII, illustrated; price, $ .75.

We have long been of the opinion that a textbook is desirable in the hands of pupils in woodworking; in fact we have used one. But the book needed is not one containing a list of the steps, seriatim, in a fixed course of study, but a book of information about tools, processes and materials. No progressive teacher is likely to adopt as a text for class use a book that is based on, or is merely the exposition of another teacher's course of instruction. What he wants his class to have is a clear description of the tools and the best method of using them; he will plan his own course. He would like also to have the book contain something about wood and trees and lumber. The volume before us is such a book planned to meet the needs of pupils beginning the subject of woodworking. The first 48 pages contain brief descriptions of the common woodworking tools and the fundamental processes of using them. The second part deals with wood, lumbering and the growth and characteristics of many American trees. The material seems to be well selected, though in a book so new in type, it will not be surprising if some teachers will want more of one kind and possibly less of another. But the selection is evidently based on the experiences of a successful teacher.

The book is well printed and carefully illustrated with both line cuts and half-tones, and attractively bound in green cloth. We believe it will prove to be a very helpful little volume. —*B.*

The Principal Species of Wood. Their Characteristic Properties. By Charles Henry Snow, C. E., Sc. D. John Wiley & Sons, New York, 1903. 6½×10 inches; pp. 203; price $3.50 net.

This volume by the dean of the School of Applied Science of the New York University offers in convenient form very succinct and definite information in regard to those woods with which construction, as we know it in America, has to deal. Thirty-nine beautiful half-tone plates serve to illustrate the letter-press. These for the most part show examples of typical trees in leaf, with enlarged details showing bark and grain. Dozens of illustrations through the text make plain the characteristics of leaf growth of the different trees referred to.

To the shop instructor anxious to give in connection with his teaching, pertinent information in regard to the woods of commerce, this book will serve excellently well as a reliable sourse of information. Grain, growth, structure and uses are all explained in terse language, while scientific notes of value are added. —*H.*

Notes for Mechanical Drawing. By Frank E. Mathewson. The Taylor-Holden Company, Springfield, Mass. 6×9 in.; pp. 86; price, $1.25.

This book is in line with what may be termed the new movement in teaching mechanical drawing, which requires that the subject be taught through problems as definite and direct as problems in pure mathematics and as practical as those met by the draftsman in the factory.

As a book for use in manual-training high-school classes or evening drawing classes we have seen nothing better than this. The superiority is not so much in

the matter it contains, though that is good and some of it unique, as in its form. Each sheet is separate from all others and the book is bound with McGill fasteners. This enables the teacher to give out the pages to his class one or more at a time as the work requires. Moreover, the pages may be purchased separately, so that it is not necessary for a teacher to adopt the whole book in order to get the benefit of the particular parts that meet his needs, Each problem is presented in the form intended for the student and not fully solved, as is too often the case in books on mechanical drawing. The problems in kinematics—cams, for instance, are especially good. The book bears evidence of having been made by a man who is both a draftsman and teacher. —*B.*

The Principles of Design. By Earnest Allen Batchelder. The Inland Printer Co., Chicago, 1904. pp. 171; price $3.00. The chapters of this book were published originally in serial form in the *Inland Printer*, but the present volume is a complete revision of the earlier articles.

Up to the present time comparatively few attempts have been made to place clearly before the student the subject of design. Of these attempts, some seem anything but serious, and all of them perhaps, in greater or less degree, approach the subject from what may be called a mixed standpoint. The book by Mr. Batchelder seems to be built up logically. The student can trace, step by step, the development of his subject. He will note that the title of the book, "principles", is suggestive of the fact that certain fundamentals are traced from the very beginning —from the most simple—and that the subject shows a gradual growth. The author treats first the elementary line, tracing the development of past work to present achievement. Through a problem given, one may see how a spot of paint may furnish the basis for satisfactory definitions of rhythm, balance, harmony and other terms so frequently used in design, but so often used with little understanding of their real significance.

In the chapters that follow the various principles are worked out clearly and their applications shown. Examples and problems are given so that the application of these principles in borders and surfaces is illustrated—space filling, balancing of parts, rhythm and movement of lines, tone distribution—all come in for their share of discussion.

The practical sides of this book are many. illustrated in the margins and pages of the printed book; in the basket or vase; in the bit of furniture. and the like. The simplicity and fullness of the treatment of the color side of the work is noteworthy. Only color values are taken up however, it being purposed to add several chapters upon tone relation at a later time. The plates throughout are wonderfully clear and distinct. Perhaps the worst criticism possible to make upon a book treating the subject of design would be that its own makeup and composition contradict the very principles for which it argues. Mr. Batchelder's book, its text, and placing of the same on the page, its margins, its half-tones — all are models of design.

To repeat, one cannot fail to note the author's method of approach to any problem; always it seems in the most understandable way, and always with regard to what has preceeded. Students and teachers of any branch of drawing, design or color work, or of the manual arts, will find much of value in its pages.

ARTHUR HENRY CHAMBERLAIN.

MANUAL TRAINING MAGAZINE

JANUARY, 1905

THE METAL CRAFTS OF INDIA.[1]

CHARLES R. RICHARDS.

N the industrial and social conditions of our western world we do not readily perceive the immediate dependence of civilization upon the constructive arts. Our cooking is done in cast iron stoves, our houses are heated by steam radiators, our floors are covered with carpets, we eat from tables covered with linen and glass and porcelain and we are clothed with all manner of woven fabrics, and yet many of us have not seen one of these things in process of making. Modern manufacture is a matterof the factory. It is a segregated and specialized affair apart from all except the workers in the particular industry.

In the east all this is different. The immediate relationship is everywhere in evidence, indeed it is the most characteristic feature of oriental life and the thing which more than any other gives its peculiar atmosphere and local color. There every village is an industrial unit. The householder buys his rug or matting from the weaver perhaps next door, his brass and copper cooking pots from the open shops in the next street where their production is one of the sights and sounds of his daily life, his clay water jars are ceaselessly evolving under the hands of the potter at the edge of the village, and so with all the simple articles of common use.

The material sources of supply are always before the eyes and the boy and girl grow to maturity with an intimate knowledge of the materials and processes that supply their daily needs.

The vast population of India represents a people still in the handicraft stage of production. While many cotton mills flourish in the Bombay

[1] Copyright, 1904, Charles R. Richards.

Presidency and machine shops for railroad and ship repairing, under the directions of Europeans, exist at several points, the common domestic needs of the Indian people is still in the main met throughout the land by hand labor. Two main reasons seem to account for this condition, viz.: the mechanical ineptness of the race and the fact that human labor is almost as cheap as steam power.

COPPER BAZAAR AT PESHAWUR.

This dependence upon hand work varies considerably, however, in different crafts. In the production of the common metal bowls and pots and in the making of the simple pottery which constitute the sole domestic utensils of the common people no other element appears. In the production of cotton cloth, however, the factory made fabric has pretty well won the field, and the material of the many hued turbans, *saris* and dhoties that constitute the common clothing, comes largely from the mills of either Bombay or Manchester, and the field of the hand loom is year by year narrowed more and more to the production of silks, fine woolens and gold thread fabrics.

Outside of the cotton mills not only has machinery not made its way but hand labor itself is not organized on a factory basis. The unit of production is almost universally the individual workman assisted often by members of his family and sometimes by two or three others, working in the small, open booths of the bazaar, the picturesque seat of India's industrial activity.

Here we have the designer and the maker in one. The mind of the master plans, his hands execute, a conjunction to make those who believe that herein is the source of all truly artistic possibilities cry out with expectation. Alas! the results are a disappointment. The Indian people of today are not an artistic race. The products of the bazaars are for the most part barren of æsthetic charm or fertility of design. The old motives are debauched and confused and the workman is too often found copying the most vulgar of modern machine patterns. For the most part art inspiration in the crafts appears to be dead, and the common workman too often lacks the judgment to study and reproduce the finer things of the past.

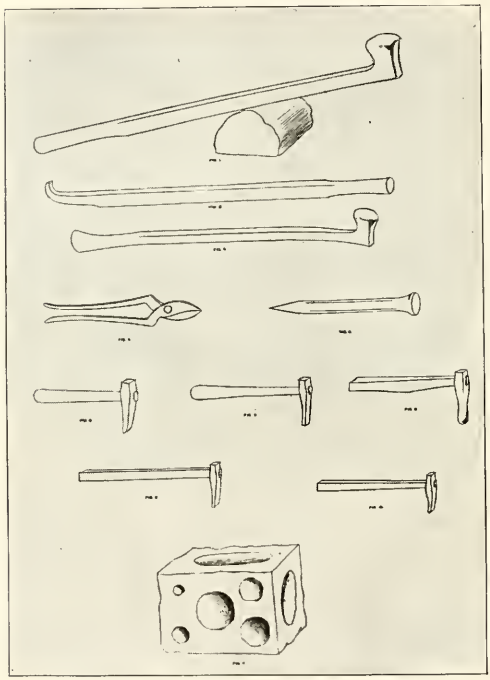
BEATING UP A SHAPE.

It is difficult to feel that the original or early Indian races were ever a truly artistic people. Despite the enthusiasm of Ferguson for the Hindu temples, an enthusiasm to which the Western mind does not always rise, it would seem to be true that the native handicrafts untouched by outside influence have never reached a high or even respectable plane of design.

Wherever distinct artistic achievement is reached the influence of some outside race may be traced—the Greeks in Alexander's train; the Mongols of Thibet and Tartary; Arabs, Afghans, Persians and Turcomans of the succesive Mohammeden invasions and conquests. Just as these latter races replaced the formlessness of Hindu building by the glories of Delhi and Agra, so was their influence felt in all the lesser arts. Instead of the jumble of grotesque Hindu imagery came clear, strong line and fineness of proportion, luxurious and florid with ornament as is the way of the east, but ordered and sane, an art resting upon æsthetic quantities rather than upon symbolism and imagery.

In the old time the finest craftmen worked in the households of the rajahs and princes, where, supported by the bounty of their patrons, they had little cause to hurry or slight their work, and every reason to strive solely for excellence in their project. Under these conditions were pro-

duced the fine achievements of the older Indian arts. Today these conditions have entirely changed. The patronage of the native princes who now purchase their house-fittings in London and imitate all things English has been withdrawn, and the craftsman is reduced to supplying the simple wares of the common people or catering to the tastes of the casual tourist and the export market.



TOOLS FOR BRASS AND COPPER WORK

Under these conditions the problem of the government art schools is a peculiarly difficult one. To effect any influence upon the crafts these schools must reach, not the designer who plans for a multitude of workers, but the individual craftsman, and the severe competition of life in India makes it almost impossible to retain boys destined for the industries any length of time in school. Some of these schools are doing fine work, but among the vast army of art-craft workers their influence is as yet hardly appreciable.

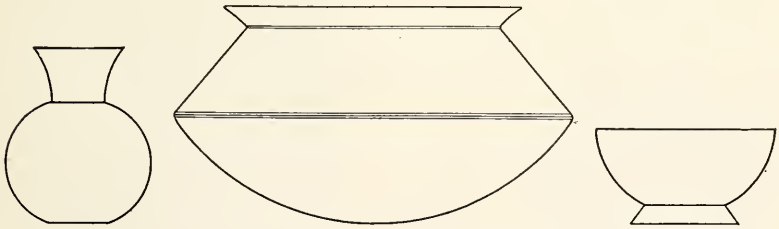
Beaten copper and brass largely take the place that porcelain and glass occupy with us, and form universally the common domestic utensils of the nation. The fabrication of these vessels form one of the most common and at the same time most interesting sights of the bazaars, and the skill of the workers and the simplicity of their tools is a source of constant astonishment to the foreigner.

Brass vessels are used commonly by ths Hindus while copper forms the material of all Mohammedan vessels. Both copper and brass are regarded as impure metals by Mohammedan law, but this prohibition is evaded by covering the copper with a coating of tin. The religious ordinances of the Hindus, which in this respect are subscribed to by the

Mohammedans, require that all vessels in which food is prepared or served shall be scoured with mud after being used and before being washed with water. For this reason these vessels are rarely ornamented and are made simple in form and contour so that all the interior parts may be readily reached. The greater malleability of copper gives rise to greater flexibility in the Mohammedan forms while the difficulty of casting this metal results in a very small use of such articles by this sect.

Brass and copper shapes are hammered up both from the sheet and from an ingot disc cast in the bottom of a shallow, earthern pan. In the latter case the ingot is hammered on the anvil mainly on the edges, until it assumes the size of the bottom of the desired vessel, and is then further hammered on the thick, central portion. This second treatment results in the curling up of the edge on account of the expansion of the center. Sometimes several discs are put together during this process and are then separated and worked up individually. The stakes used by the Indian workmen are not unlike those employed in the west save that they commonly have a very long shank upon which the workman sits. Unlike the western craftsman the Indian workman hammers the metal towards his body and not away from it.

Among the commonest metal vessels are the lota, a small pot with a flaring rim used as a water vessel and cooking pot; the katora or cup; the batua or degsha, a cooking vessel; the thali or tray.

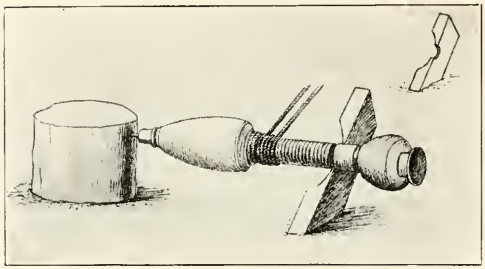


LOTA, DEGSHA AND KATORA.

Casting in brass and bell metal is frequently employed to produce many of these vessels. Here the waste wax process, the universal method of the east and formerly also of the west, is used. In this process a core is first made of clay, sand and some kind of fibrous material. This is either fashioned by hand or on a primitive lathe. After being sun dried this core is covered with a coating of wax to the desired thickness of the metal and this is smoothed off on the lathe. Then comes a final covering of a composition similar to the core. This is applied in successive

coats, the first thinner or more liquid than the others and each being thoroughly dried before the next is added.

In the production of small castings this mold is commonly attached by a luting of clay to the top of a charged crucible which it completely covers. A hole has previously been made in the bottom of the mould leading to the wax coating and the whole affair is then placed in the furnace. When the charge has melted, the mould and crucible are inverted and the fluid brass runs down into the mould taking the place of the wax which has previously melted and vaporized. When large castings are to be made the brass is fused separately in its crucible and then poured into the mould from which the wax has been melted out. This is the rudimentary form of the casting process which reaches its greatest refinement in the wonderfully complicated products of the Japanese bronze founder.



LATHE.

The cast vessels are first smoothed with a file and then placed on a rude lathe very similar to that employed in making the core. This lathe is operated by a strap pulled by one arm of the workman who holds his chisels and finishing tools with the toes of one foot and the other hand.

Work in silver and gold is as much a tradition of India as is brass and copper and still continues to be produced in considerable quantities although the demand from the native princes for articles of household has greatly declined. Among the common people the main use for precious

NATIVE WOMAN WITH SILVER ORNAMENTS.

metals is in articles of jewelry, and the amount of such material use worn in the form of anklets, bracelets, nose rings, earings and head ornaments is something astonishing. This disposition of such objects upon the person is very much in the nature of a bank deposit and very often the entire wealth of a household is carried about in this way.

TRAY FROM JEYPORE.

Iron is considered as an impure metal, and in consequence is not much found except in tools and weapons, although the extraordinary wrought iron pillar or lat at Delhi testifies to the great skill in working this metal 1600 years ago.

Engraving, chasing, encrusting, damascening, enameling and special processes such as Bidri and Niello work are employed in the ornamentation of metal ware.

The chasing or repousse process is executed in substantially the same manner as in the west. Pitch is used as a supporting matrix, and the tools are very similar to our own. The style of repousse design varies in different localities. In Cashmere a low, flat treatment is practiced, generally of an interlacing or diaper pattern with a simple flower form showing in the openings. In Jeypore many heavy trays and table tops are made in which a very effective flat repousse or sunk pattern, often of an arabesque type is used on the rim.

In the Bombay presidency a style called Kach or Cutch, said to be of Dutch origin, is much used for silver work. This consists of a graceful and intricate floral design raised in shallow repousse and polished on a frosted background.

SILVER GOBLET OF CUTCH WORK.

The brass of Benares is perhaps better known to the outside world than any other, being sent to Europe and the United States in considerable quantities. It was at one time of a high order of excellence, but the old designs have been abandoned and the work produced today is perhaps the poorest in design and execution of all the brass work of India, so poor indeed that all examples on the present decadent lines were excluded from the Exhibition of Indian Art at Delhi in 1903.

SILVER BOWL BY MAUNG YIN MAUNG OF RANGOON.

In Southern India, particularly in Madras and Tanjore, very elaborate and high repousse of figures, generally representing the Hindu gods and similar in design to the elaborate and florid encrusted work, is employed.

Burmese silver is remarkable for its very high relief and the skillful modeling of figures. The method of beating up the shape is very similar to that employed in working up a brass bowl from an ingot, already described. When the bowl is finished it is filled with a composition of resin, brick dust and oil and the design is drawn in pencil. The outlines are then marked with the graver, after which all the parts to be lowered are punched in with an embossing tool. The composition is then melted out and the portioned destined for high relief are raised from the inside. These two processes are repeated several times, the silver being annealed each time, and the surface is finally finished by chasing and carving as desired.

The condition of design among the crafts in Burma is greatly superior to that in India. In the former country the traditions of the crafts of silver working and wood-carving have been kept alive and the master workmen of today are producing results that in spirit and technique compare favorably with the masterpieces of the older time.

The process of encrusting one metal upon another is met with in a great variety of forms. Brass is inlaid on copper, copper on brass, and silver on copper and brass. Sometimes the outlines of the applied pieces

ENCRUSTED WORK FROM TANJORE.

are very simple, and the surfaces made flush with the background, producing some very pleasing and quiet effects. In southern India, particularly in Tanjore, encrusted ware is made in which the applied portions stand out in higher relief and are treated with elaborated modeling. In modern Tanjore work the practice has become very general of blocking out these small pieces with a die.

In all cases the method of application seems to be about the same. The outline of the piece to be encrusted is marked on the surface of the foundation metal, and this is then recessed with the graving tool until deep enough to receive the edge of the small piece. This is then secured by hammering the ground metal over its edge.

Damascening is perhaps too specialized an art, and one that is too little used today to warrant more than a passing reference, Although the term is often applied to the encrusted ware of Cairo and Asiatic Turkey, it belongs properly only to work of quite a different character,

viz.: the decoration of iron and steel by an inlay or overlay of gold. Damascening was preëminently the art of ornamenting armor and weapons, and now that the day of the shield and helmet has gone by, there is but little place left for such a process. Boxes and small trays are sometimes treated in this way but the great time and skill required in

FURNACE OF SILVERSMITH AND ENAMELER.

execution, the unsuitability of bright iron or steel for decorative purposes, and the inevitable smallness of the effects produced, all tend to the disappearance of the art.

Damascening is of two kinds; true damascening in which a gold wire is inlaid in the surface of the metal, and false damascening in which gold wire or gold foil is made to adhere to the roughened surface of the metal. In the first process the outline of the design is cut out with the graver. The bottom of the groove so formed is then widened by an embossing tool, and gold wire is forced into the groove with a burnishing tool. The surface is then hammered, with the result that the edges of the groove are set over on to the wire and holds it fast. Heating is then made use of to produce a blue background color, and the whole surface is carefully burnished.

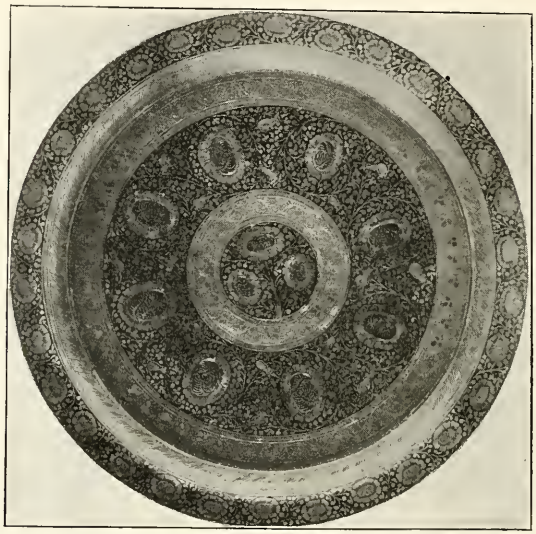
In false damascening the surface is scratched with a knife-like tool, first in one set of parellel lines, then by another and yet another at an angle with the first, thus producing a roughened surface made up of fine grooves and a great number of exceedingly minute points. Upon this surface gold or silver wire or foil is pressed along the lines of the design by a smooth ended tool, hammered lightly and then burnished.

Sir George Birdwood calls enameling the master art craft of the world, and says that the enamels of Jeypore rank before all others. In spite of the fact that this art has been so much identified with India one sees comparatively little evidence of it in the bazaars today. True enameling is pretty much confined to work in gold and silver, and inasmuch as the exquisite cups and bowls and spoons formerly made are now no longer in demand for the princes' households, such work is at present confined mainly to articles of jewelry. Of true enameling on brass or copper one sees very little except that made in Cashmere, and inasmuch as the range of colors obtainable in gold is much greater than in silver, and still more so than on copper or brass, gilding or silvering is commonly relied on when the latter metals are employed. Champlevé is the process universally used in India. In this method the metal is engraved or chased out so as to provide depressions for the reception of the enamel. In the gold enamel of Jeypore only a narrow line of metal is left between the different colors giving an effect very similar to that of the cloisonne of Japan.

ENAMELED SAVAIS FROM CASHMERE.

The furnace of the Indian enameler is small and his methods of heating defective, so that comparatively small articles only can be treated. The colors are applied one at a time, those that can stand the greatest amount of heat being first used, and and others in order of fusibility. The flux used is invariably borax, tin oxide being added to lower the

temperature with the further result of making the enamel opaque. The colors are silicates or borates of the metals. Yellow is obtained by the use of chromate of potassium; violet through carbonate of manganese; blues, as in the tiles and pottery of all central and western Asia, by cobalt oxide; greens through copper oxide; and browns through red iron oxide.



TRAY OF LAC ENAMEL FROM JEYPORE.

In the work of Cashmere where silver and gilded or silvered copper is commonly employed the depessions are sunk with an embossing tool and a wide, flat ridge, running in an interlacing pattern is left between the spots of enamel.

The mode in Cashmere is to paint the surface with a sort of silicious paint that is readily fusible. The article is then subjected to a low heat sufficient to melt the enamel paint but not to allow the colors to run together. These Cashmere enamels are thin and not very translucent, and almost always present two shades of blue, one light, and one dark.

Another form of enamel, or quasi enamel, is very much in evidence in the tourist centers of India, particularly at Jeypore. This is lac enamel, a ware that has become familar to us through importations. Such work is commonly employed on brass trays or hammered shapes and is performed by cutting away the metal back ground to a very slight

depth, so leaving the design in relief. The hollows are then filled with a composition of colored lac which is applied by a hot bolt which fuses and distributes the lac. The excess and irregularities are then rubbed off with sand paper or powdered brick.

EXAMPLES OF BIDRI WORK.

In the early form of this ware made in Moradabad, lac was used but later bright red was introduced, and today pinks, greens and other bright colors make a perfect kaleidoscope of effects. The tendency seems also to be towards substituting a design in lac on a metal background for the metalic design on the lac background on account of the greater simplicity and cheapness of the former.

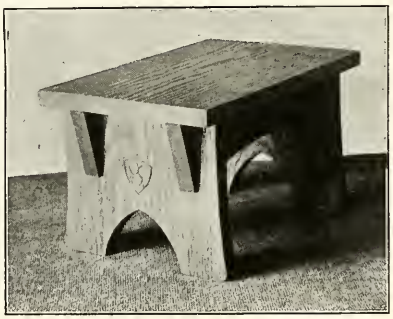
This method of decoration is not necessarily displeasing or ineffective in itself. It is simple in execution and if good colors and designs are used may be fairly agreeable in results, but the acres of such work to be met with in the shops of Jeypore, all of which seem to be greedily absorbed by the tourist and export trade, certainly represent one of the most decadent forms of Indian craft at the present day.

Bidri is a peculiar form of inlaid work that seems to have originated in India, and one that posesses considerable artistic possiblities. The

foundation metal seems to be a very variable alloy, sometimes consisting of tin and copper, sometimes of zinc and copper. The desired shape is made by casting and turning in the lathe. The design is then cut out with an engraving tool, thin plates of silver or gold embedded in the hollows, and the surface smoothed or polished.

The vessel is then heated and the background colored by rubbing with a paste made of sal amoniac and saltpetre, moistened with rape seed oil and thickened with charcoal. The color produced in this way is black or dark green, and is permanent and rustless. Hukka bottoms were formerly frequently made by this process and are still produced in some numbers at Lucknow.

(It was the intention of the writer to include in this paper some reference to Indian work in pottery and textiles. The limitations of space and time, however, have prevented this, but it is hoped to deal with these crafts in a future article.)



OUT-DOOR INDUSTRIAL WORK FOR RURAL SCHOOLS.[1]

LUTHER A. HATCH.

HE following lines of out-door industrial work are suggested as possible for rural schools. In a number of cases they relate themselves in a vital way to the indoor work, industrial and other, thus supplementing that work by giving it a concreteness not otherwise attained.

There ought to be a school garden connected with every country school. Flowers of many kinds, well cared for, will add greatly to the beauty of the school grounds. The planting and caring for these, if wisely directed, furnishes the best of employment for children. The school garden may be made the center for the propagation and distribution, as well as for the introduction into a community, of many of the better varieties of plants. For instance, start currants and grape vines from slips. Start gooseberry bushes and black raspberry by covering a part while attached to the parent plant. Have pupils learn how to do budding and grafting. A small strawberry bed will furnish plants in one season for many new beds. A blackberry or red raspberry bed, after it has once been well started, will furnish numberless plants. It is not a difficult matter to raise many kinds of trees from seed. The writer distributed 95 catalpa trees to pupils one Spring. These trees were raised from the seeds of a single pod. Many of the evergreens may be started in the school garden and later distributed throughout the community. If you do not know how to do this, send to the Division of Forestry at Washington, D. C., for information. There are an endless number of experiments that will suggest themselves to the live teacher in the rural school, that make a garden essential to good schoolroom work. Pupils and teacher should discover real problems, related to, and growing out of, the farm life that will add richness to that life if solved by pupils in the school.

[1] This article is one section of a report on Manual Training in Rural Schools which is being prepared by a committee of the Illinois Manual Arts Association consisting of Luther A. Hatch of the DeKalb State Normal School, chairman, Oscar L. McMurray of the Chicago Normal School, and A. P. Laughlin of the LaGrange public schools. The full report will be presented and discussed at the second annual meeting of the Association to be held at Bradley Polytechnic Institute, Feb. 17 and 18, 1905.—EDITOR.

The investigation of plant enemies and how successfully to combat them opens up a large field for work. This involves the collecting of data upon which to base conclusions that are reliable, and the waging of war against these enemies which at times involves industrial work that is decidedly educative. I have in mind such things as currant worms,

SEED GATHERING—FIFTH GRADE.

cabbage worms, potato bugs, codling moth, the curculio, scale insects of different kinds, leaf roller, cut worm, slugs, mildew, plant lice, etc. Have pupils get into touch with what is being done along this line at Champaign.[1] Spraying of plants is not a bad thing to teach in a country school. It may be worth much to a community for pupils, especially to the boys who are to be farmers, to have some practical work in spraying plants.

The collecting and examining of soils in the school district will furnish an opportunity for industrial work. We do not utilize, as fully as we should, the collecting instinct of children. The soils and rocks make an exceedingly interesting collection. There will be a range of soils extending from the clays of the hills to the loam of the valleys, and the peat of the swamp. These skilfully arranged tell an interesting story.

The collecting of native materials, as grasses, rushes, willows, husks, twigs, etc., for later work in construction throws the country boy and

[1]The University of Illinois.

girl into a new line of work that may be made exceedingly attractive. It is a good thing to learn to utilize that which lies at hand.

If there are trees about a school these should be trimmed. The pupils can do this if rightly directed. Think of the value of this work if done in connection with the study of pruning. You can readily see how

WOODWORKING—GRADES THREE TO SIX.

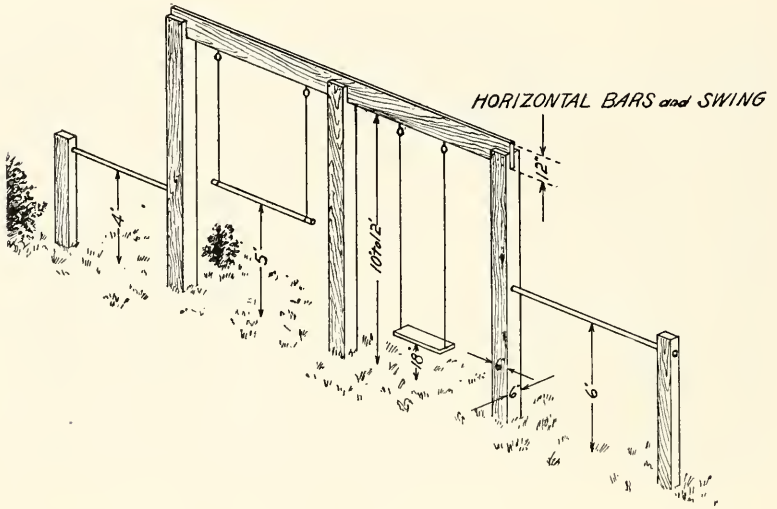
this may reach over to the farm and help to beautify and, in many cases, make more profitable the trees that grow there. Over and above this will be the effect upon the child who will feel that what he is learning at school has an immediate, practical value.

If these trees are large the branches removed may be worked into rustic seats for shady nooks on the school ground. The smaller branches may be used in the workshop if you are fortunate enough to have one. They are just the things for log cabins, pen racks, doll furniture, match boxes, etc.

The fences and walks about the school may need attention. What could be of greater help to boys from the farm than to have them find out how cement walks are made and to lay some? They could get the material and do the work. Let the district help defray the expense. Cement floors are needed in the cow barns. The cellar floor has always been damp and unhealthful. The boys will know how to cement it and will be anxious to have father get at it. It will be done. Cement walks at home add greatly to the appearance of things. A cement curbing

about the well will improve the sanitary condition of the water. Not all teachers could guide boys in this work but there are some who can.

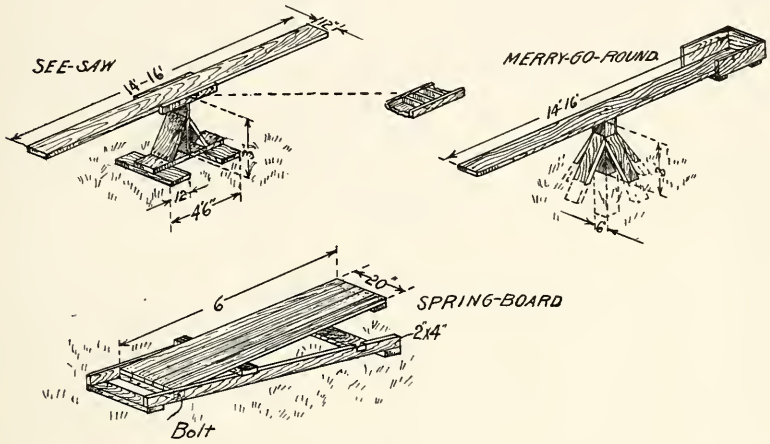
If the wood needs to be cut and split why not let the boys do it and the district pay them instead of paying someone else? Do not feel that everything that a boy does should be done for nothing.



The boys play a number of games that require that the ground should be laid off in a certain way. The teacher can direct in this. Some practical geometry can be introduced in connection with the right angle and circle. Have pupils find out how the mason finds a right angle in laying off the foundation of a house. Pupils will find that it is not an easy matter to measure accurately. What an easy introduction from this to the study of the measuring of land! If each boy and girl in the upper grade would bring a drawing and description of the farm upon which he or she lives as a basis for the study of land measuring, the teacher would have no trouble in creating an interest in this subject. Further than this the farm would always mean more to these boys and girls.

Pupils might construct apparatus for the measuring of rainfall, also investigate the depth to which the rain penetrates the soil. This matter of rainfall may be made the basis of many problems; as, How much water fell upon the school ground during the last rain? How much fell on an acre of land? How much water fell on your father's farm? Es-

timate the annual rainfall. In connection with the rainfall there are a number of interesting experiments that may be made with soils to ascertain how much moisture different soils will hold, which soils retain moisture longest, and what effect cultivation has upon the retention of moisture.



Every winter people wonder how deep the frost has penetrated the soil. Why not have pupils do some investigating? They might find out if the frost leaves the soil from above or below, or from both directions.

A sun dial would not be a very difficult thing to make. With this should be a piece of apparatus for telling the noon angle. This would aid the child in understanding the motions of the earth and help in clearing up some of the nebulous ideas that children often hold on this subject.

There are a number of pieces of gymnastic apparatus that could be easily constructed for the school ground. These could be made by the boys and when complete would make the school grounds far more attractive, for there would be more things for the children to do. The following are some of the pieces of apparatus that might be constructed: Swing, turning pole, swinging rings, ladder, seesaw, merry-go-round, spring board, trapeze, giant swing, baskets for basket ball, and standards for jumping. There ought to be a pole for boys to climb. The expense of all this need not to be very great.

What a fine thing it would be if the pupils could collect materials and construct a workshop in connection with every country school house. Let them gather the stone and sand, make the mortar, and build the foundation. It need not be high. It might be a lean-to at the end of the school house. Have plenty of light. Cut a door through connecting it with the school room. Let the boys go there to work at recess, at noon and before and after school. When you feel inclined to have a boy sit on the dunce block, or on nothing, or to stand with his nose in the corner or to take the front seat, or to do a hundred other time-killing, soul-destroying things, let him go to the shop and work out his salvation. Let the girls use the shop as well as the boys. They enjoy it and it does them much good. I see in the shop a safety valve for a part of the surplus energy that goes to waste in the country school. All could not work out this idea in the rural school but there are some who can.

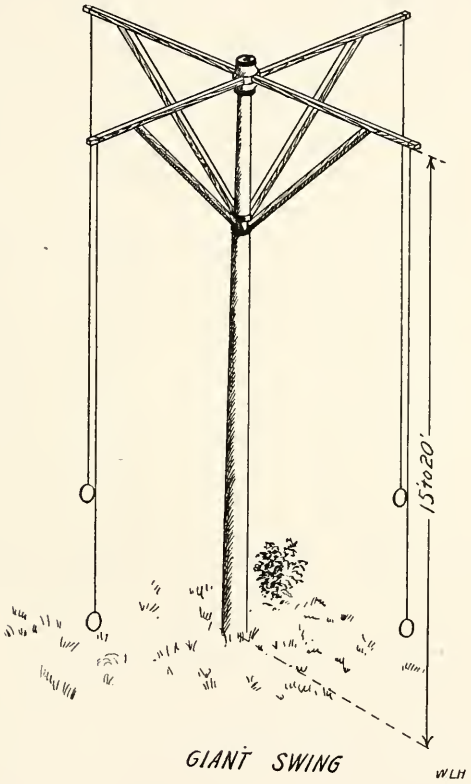
In making the above suggestions it is taken for granted that those who attempt the work will prepare themselves reasonably well, if they have not already done so, to take up the work in an intelligent and common-sense manner. The teacher need not feel that he must know all that there is to be known on the subject before an attempt is made to do this line of work. The teacher must grow in the work as his pupils grow. Experience gained in the doing should serve as an important guide for other steps to be taken. He should have the insight to separate that which is of the most worth to the growing child and present it in a manner to awaken latent energies and stimulate abiding interest in many of the things and activities that lie near at hand.

The spirit of independent investigation and action should be formed. Open-mindedness and toleration of the views of others may be made much of in industrial work. Originality and inventiveness, with the power to adapt the best that the world has to give, should characterize all efforts.

In all of the work the element of motive on the part of the child should be carefully studied and should serve as an important guide in the choice of the lines of work. The teacher needs, above all, to study with care his conditions and to use common sense in the way he takes up the work for the first time, in order that patrons and pupils may see the true purpose of the work being done.

The teacher and his pupils need to find problems for solution rather than take those that have been discovered by another in a different community under different conditions. True, these may be of decided value

in their suggestiveness, but the teacher will need to make, in a large measure, his own course of study. This also must be flexible, for there is nothing that is more deadening in its effect upon the work of a school than a course of study that has been completely worked out as it is to remain. There must be growth. This principle does not apply to industrial work alone, but to every line of work taught in any school, no



matter what the purpose of that school may be. How foolish to do the same thing in the same way year after year along an educational line when improvement is possible! How thoughtless to try to do just as others have done, what others have done, because others have done these things! Others certainly are a great help to all of us. Even their mistakes serve as a guide. However, every teacher and every scholar should possess individuality. Signs of progress should be evident. Standing still is not a symptom of progress.

A STUDY OF MANUAL TRAINING EQUIPMENTS.[1]

CHARLES H. BAILEY.

N the introduction of manual training into the public schools, and in the organization of the work, particularly in the higher grades, the problem of equipment will usually prove one of the most difficult to solve. The reason for this exists largely in the fact that the installation of such work in an efficient manner usually involves considerable expense, and since in each particular case the whole thing is more or less of an experiment, school boards are cautious about employing expensive teachers and making large appropriations until it has been demonstrated in their own schools that the work they are undertaking is a valuable one and the necessary expense justifiable. The question of cost, therefore, is most often the factor that determines the completeness of the equipment provided. The supervisor or teacher is usually given a certain sum with which to fit out his department, and in most cases this amount is not sufficient for an elaborate equipment. The question to be answered then is, What disposition can I make of my appropriation so as to secure the greatest efficiency for a given expenditure?

In the solution of this problem one of several courses may be pursued. There are a number of dealers who make a specialty of manual training supplies from whom may be secured catalogues containing lists of what they consider to be typical equipments for certain kinds of work. One of these equipments may be selected, ordered as a whole, and the matter settled. Such an equipment will usually be perfectly satisfactory, but in most cases will be more elaborate than necessary, and it will be found that an equally efficient one might have been secured at a lower cost. Again, the teacher may sit down with such a catalogue of supplies before him, and, depending upon his knowledge of the processes he expects to teach, select such tools, etc., as in his judgment seem to meet his needs, without considering in any way the ideas and experience of others. On the other hand, he may first investigate the equipments used in other schools, making an effort to learn something of what is being done in each case in order to determine in some measure its effic-

[1] Paper prepared for the annual meeting of the Illinois Manual Arts Association, February, 1905.

iency, and, using this knowledge as a point of departure, decide what shall constitute his equipment. The latter method is manifestly the reasonable way in which to approach the problem.

In the preparation of this paper an effort has been made to secure a lot of data with reference to manual-training equipments as they actually exist, together with an estimate of their cost, and a general idea of the amount of work that is being done, with the purpose of supplying to superintendents and teachers some information that will be of value to them in facing this problem. An attempt has been made to secure such information in regard to all processes that are taught as handwork in the public schools in any of the grades. Some of these processes, however, require very little in the way of equipment, and in regard to some of the others it has been hard to obtain definite data. Particular attention has been paid to the equipment for teaching woodworking in the special room, as this is the most expensive with which the ordinary teacher of manual training has to deal, and the one in respect to which there is probably the greatest variation in practice, therefore usually the most difficult to handle. The higher branches of shopwork that are often introduced into high schools, such as wood-turning, forging, foundry work, machine-shop practice, etc., have not been considered, partly through lack of time and space, partly because these branches involve equipments that are much less variable than those for the processes taught in the lower grades, and also on account of the fact that, in consequence of the expensiveness of the equipment for these branches, they are not generally introduced into the public schools. No attempt has been made to investigate equipments in special manual-training schools, normal schools, etc.

To secure the information referred to above, blank forms were prepared and sent out to a large number of schools which have manual-training courses, these forms to be filled out with certain data concerning the kind and amount of equipment provided for use in the various kinds of work taught, together with the estimated cost of this equipment, cost of maintenance, number of pupils enrolled, etc. Quite a number of these reports have been filled out as requested, and the data they contained have been tabulated, as shown below. The greater number have been received from schools in the state of Illinois, as this study has been made with particular reference to this state, and is expected to be of especial interest to Illinois teachers. Nevertheless, information has been secured from a number of the larger cities outside of the state in order to get a broader outlook on the subject.

Table Nº 1.

EQUIPMENT FOR WOODWORK IN THE SPECIAL ROOM.

	Chicago, Ill.	Peoria, Ill Franklin Sch.	Evanston, Ill.	Joliet, Ill.	Rock Island, Ill.	La Salle, Ill. Twp. High Sch.	Savannah, Ill. High Sch.	La Grange, Ill.	Lake Forest, Ill.	Evanston, Ill. High Sch.	Rockford, Ill.
Single benches		20			21	25	12				20
Two-pupil benches			12	2				8	10	12	
Four-pupil benches	6										
Iron vises	4		2		1		1	2		2	2
Wooden vises		1		4		2			2		
Jack planes	4	1	2	2	1	1	1	2	2	2	1
Smoothing Planes	8*	1				1	1	2		2	3*
Block planes		1		2	1	1			8*	2	1
Ripping saws.	6*	2*	6*	1		1	6*	2	2	2	1
Cross-cut saws.	6*	2*	6*	5*		1	1	2	2	2	4*
Back saws.	12*	1	2	1	1	1	1	2		16*	1
1" chisels	4					1	1				
7/8" chisels.									2		
3/4" chisels		1	220*	2	1				2		
5/8" chisels.	6*					1					
1/2" chisels.			20*			1	1				
3/8" chisels.			220*								
1/4" chisels.	6*	1	20*	2	1	1	1				
Chisels, assorted sizes.								104*		45*	18*
Try-squares.	4	1	1	2	1	1	1	2	2	30*	1
Gauges	12*	1	1	2	1	1	1	2	2	18*	1
Knives.	4	1	1	2	1	1		2		40*	1
Rules.	4	1	1	2	1	1	1	30*		2	1
Spoke shaves.	6*	2*	3*	2		1		2	6*	12*	1
Bench brushes.	6*	1	1	1	1	1		2		12*	1
Bench hooks	4	1	1	2	1	1	1	2	10*	22*	1
Pencil compasses.	4	1		6*	1	1			12*	12*	1
Screw drivers	6*	1	1	6*	1	1	1	12*	7*	3*	6*
Dividers	6*		1	3*		1	1	2	10*	2	4*
Bevels.		4*	1	1*		1		2	4*	2	6*
Hammers.	6*	1	1	8*	1	1	1	2	10*	12*	6*
Mallets.	12*	4*	1	8*	1	1		2	12*	30*	6*
Drawing boards	4	1			1	1		40*	20*		1
Oil stones	6*		1	3*	1	1	1	16*	5*	2	4*
Oil cans	6*		1	1*		1	1	20*	2*	2	2
Cost of bench and tools.	$36	14.25		25	7	25	22	15	17		16
Cost of general tools.	$96	50	50	40	250	200	60	500	30		100
Total cost of equipment.	$										
Number of pupils.	$105	166	200		122	50	67	40	67	40	200
Cost per year per pupil	$.36	.50		.40	.75	.50		3			1
Cost of fixtures	$		1500	5	60	500		50			
Hours per week per pupil.	1 1/2	1 1/2-2	1 1/2-2	1 1/4	7 1/2	4 1/2	2	8	2-2 1/2	5 1/4	1 1/4-7 1/2
Number of centers	150	6	1	1	8	1	1	1	1	1	1
Compulsory or elective	C	C-E	C	C	C-E	E	E	E	C	E	E
Grades using special room.	7,8	7,8	6,7,8	7,8	H.S	H.S.	H.S	H.S.	5,6,7,8	H.S.	7,8+HS

Freeport, Ill.	Winnetka, Ill.	Serena, Ill.	Oak Park, Ill.	Quincy, Ill.	Highland Park, Ill. Deerfield Twp. H.S	Savanna, Ill.	Des Plaines, Ill.	East Aurora, Ill.	Menominie, Wis.	Cleveland, O.	East Orange, N.J.	Indianapolis, Ind	Detroit, Mich.	Springfield, Mass State St Gr. Sch.	Boston, Mass.
			20	24	10	10				26	25	20	25	24	28
6	1	2				1	12	10	14						
	5							1							
2			1		1	1	2	2		1				1	
	4	2		1					4		2	2			1
6*	14*	2		1	1	1	6*	2	1	1	1	5*	1	1	1
6*	8*	1	1	1	1		1	2	1			20*	4*		1
				1	5*	1	2*				1		1	1	1
5*	1*	1		12*	1		2*	1	2		12*	10*	1	1	1
1	14*	3		12*	1		4*	1	2		6*	5*	6*		1
6*	2		1	1	1	1		1	2	1	1	20*	1	1	1
				1	1			1	1		1		1		1
	10*							1							
		1			1	1						20*	4*		
									1						
			1	1	1			1					1	1	1
									1						
		1	1			1		1	1			10*	8*	1	1
48*							12*		2						
8*	14*	1	1	1	1	1	1	2	2	1	1	20*	1	1	1
10*	8*	1	1	1	1	1	2*	1	2		1	10*	1	1	1
6*		1	1	8*		1		2		1	1	10*	1	1	1
6*		1	1	1	1	1	2*	2	2	1	1	20*	1	1	1
	2	1	1	12*	1	1	1	12*			1	10*	1	1	1
6*			1	1	1	1		1	2	1	1	10*	1	1	1
1	6*		1	1	1	1			2	1	1	20*		1	1
	12*							24*		1	1			1	1
6*	2*	1		6*	1	1	2*	1	2		6*	10*	10*	1	1
6*	4*		1	6*	1		2*	1	2		4*	10*		1	1
6*	2*			12*	1	1	1*	3*	2		2*	5*	4*		1
6*	10*	3*	1	1	1	1	4*	1	2		8*	10*	1	1	1
1	8*		1	12*	1	1	2*	1	2		6*	2*			
	15*		1		1		1	200*		1			1		1
3*	2	1		2*	1	1	1*	2	2		2*	2*	2*		2*
6*	1	1		2*	1	1	1	1			2*	2*	2*		1*
	27	5	15	15	25	18		30	40			12		1589	18.50
	75		210	150	200	25		100				35		110.21	50
							95			375	330				
110	71		193		38	95		400	270	200	140				200
	.80		.50		2			1		.25	.80	1.16		.53	.50
					50			100			50	20		185	300
6	1-1 1/4	1	1 1/4-2 1/2	1 1/2	3 1/3-6 2/3	1	8	1 1/2	1	1 1/2	2/3	1 1/2		1-1 1/2	2
1	1		1	4	1	1		1	5	5	8	12		6	41
E	C		C	C	E	E	E	E	C-E	E	C-E	C		C	C-E
7.8-H.S	5.6.7.8	6.7.8.9	7.8	5.6.7.8	H.S	6.7.8	H.S	6.7.8-H.S	5.6.7.8-H.S	7.8	5.6.7.8	7.8		6.7.8.9	7.8.9

Some difficulty has been experienced in obtaining this information in just the form desired, and it has been necessary to make some deductions and inferences, but it is believed that the tables are reasonably accurate, although in some instances they are incomplete. If errors have been made, they have resulted through a misunderstanding of the reports, and not through intention.

Table No. 1 contains the data with reference to the equipment for woodwork in the special room, and requires a little explanation. In each case an attempt has been made to give in full the individual equipment —that is, the equipment furnished for the exclusive use of a single pupil in the class. In the table such items are indicated by the numbers not followed by an asterisk (*), and they show the number of such articles on each bench. The numbers after which the asterisk appears indicate in each case the number of such articles provided for use in the room, and would rightly come under the head of general tools. They have been inserted here, however, for convenience in comparison. In some instances, some of these tools are evidently placed on the benches, but, as they are less in number than the number of pupils in the class, they cannot properly be classed as individual tools. In the case of the larger cities where a number of centers are provided, the table represents the equipment furnished for each of these centers.

It was not deemed wise to attempt to compile a table of general tools, for the equipments of different schools show the most extreme variation in this respect from a few indispensable articles to an elaborate list containing almost every tool adapted to the work in hand. The estimated cost of the general tools has been given in most cases, and the variation in this item is the chief factor in the wide difference in the cost of equipments.

A little study of the above table discloses the fact that there are certain tools which are generally considered to be necessary to the teaching of woodwork in the specially-equipped room, and that of these there are a few which it is considered very desirable, if not absolutely essential, that each pupil in the class have for his individual use. Still, even in this respect, it will be seen that there is no uniformity of practice.

In the first place, benches of some sort must be provided. These may be made by the pupils themselves, may be built by local workmen according to some special design, or may be purchased of some dealer in manual-training supplies. It is generally conceded by teachers that single benches are the most desirable, but benches for two or more pupils may be had at less expense for the same number of pupils in the class,

and with them a larger class may be accommodated in the same room. Judging from the above data, the iron vice, although it is the more expensive, seems to be the favorite.

As has been stated above, reference to the table will show what tools are considered to be the most essential, but the equipment in each case must depend upon circumstances. The number of tools need not be great in order to do effective work; in fact, there is a growing tendency on the part of manual-training teachers to decrease rather than to increase their equipment, particularly in respect to the number of tools on each bench. There are instances where very good work is being done with small equipments, and many schools have started out in a small way, gradually increasing as the opportunity offered. Some examples of small and inexpensive equipments are to be found in the table.

When all classes use the same cutting tools, some difficulty may be experienced in keeping these tools in order. To overcome this to some extent, individual plane-irons are sometimes provided, and each pupil held responsible for the condition of his tool. This plan seems quite satisfactory in the higher grades, and involves very little increase in cost. Individual sets of chisels are also provided in some cases, but this seems more of a luxury than a necessity.

The item of cost, as shown in the table, is an interesting one, especially when taken in connection with the number of pupils accommodated, and it is instructive to note how many pupils may be taken care of with a single equipment, and that, in some cases, an inexpensive one. The table shows a great variation in the cost of materials for carrying on the work. This is due in some measure to the plan adopted in some schools of requiring the pupils to pay for material used in the construction of articles which they carry away. Such a plan will materially reduce the cost of maintenance, and there seems to be no serious objection to its practice. In cities where more than one center is provided, the number of pupils accommodated at each center is given in the table.

This plan of establishing manual-training centers is one designed to reduce the cost of equipment. A room is fitted up in one school building, or in a special building conveniently located, and the pupils from a number of other schools not too distant come to this room for their manual-training work. Thus a number of schools are provided for with only one equipment.

It will be seen that the work in the special room, in nearly all cases, is given to the pupils in the seventh and eighth grades, but in some in-

stances the fifth and sixth grades and high-school pupils are also accommodated.

The manual-training work which is given to pupils in the public schools below the seventh grade varies so greatly in regard to the kind of work done, the method by which it is conducted and the equip-

Table № 2

EQUIPMENT FOR WOODWORK IN THE GRADE ROOM.

	Peoria, Ill. Franklin School.	Rock Island, Ill.	Onarga, Ill.	Quincy, Ill.	Springfield, Mass.	Menominie, Wis.	Cleveland, Ohio.	Indianapolis, Ind.
Gauges.					1			
Planes.						1		
Saws.						1		
Gimlets.						1		
Knives.	1	1	1	1	1	1	1	1
Chip Knives.						1		
Rules.	1	1	1	1	1	1	1	
Pencils.	1	1						
Try-squares.	1	1	1	1	1	1	1	
Compasses.	1	1		1	1	1	1	
Dividers.			1					
Hammers.								1
Bench hooks.						1		
Tablets.	1							
Drawing boards.	1	1						
T-squares.	1	1						
Triangles.	1	1						
Estimated cost per set.	$.80		.55		1.50	1		.35
Cost of general tools.	$	60			1.25	7		
Cost of tool cases, etc.	$	40	15		10			2
Cost per pupil per week.	$.10	.12	.10		.10		.7	.15
Hours per week per pupil.	1½	5/6	1⅓	1	1	3	1	1¼
Grades doing this work.	6	7,8	6,7	5,6	6	4	5,6	5,6

ment provided that it has been impossible to obtain very sastisfactory results in this investigation. Whatever sort of work is done in these grades must usually be done in the grade room; it must be taught by the grade teacher, under the direction of the supervisor if there is one, and must be very simple in character to be suited to the age and abilities of the pupils. All these things, together with the item of cost, place limitations upon the extensiveness of the work and demand that the equipment shall be small, simple and inexpensive. Processes that involve

costly, elaborate and extensive equipments are obviously impossible of introduction as handwork into the public school.

In some schools a little wood work is done in these lower grades but it is simple in character and usually confined to knife-work, with the possible introduction of a few of the bench tools that are easy of manipulation, such as the plane, saw, try-square, hammer, etc. A simple bench with vises and tools sufficient for the accommodation of four or six pupils may be provided and the pupils permitted to work at the bench in turn as occasion demands. Table No. 2 shows what is being done in this line in some of the schools.

A glance at this table will show how greatly practice varies in regard to the equipment for this kind of work. It is to be regretted that the data given here are not more comprehensive, but the number of schools doing this kind of work seems to be much less than those doing the woodwork in the special room. Such a condition prevails in the state of Illinois at least; whether it is true in general this investigation has not been extensive enough to determine. This fact is somewhat surprising in view of the small cost of equipment for such work as compared to the cost of fitting out a special room. To be sure, the woodwork that can be done in the grade room is much more limited in its character and scope than that which is possible in the special room, but if properly conducted, its value is unquestionably great enough to justify its more general introduction, particularly where the more elaborate equipment is impossible.

In providing for work of this kind, it is desirable that some sort of desk cover be furnished as a protection to the ordinary desk top. These may be designed by the teacher and constructed at little cost, or may be purchased of dealers. They may, however, be dispensed with if considered too expensive.

Investigation shows that this work is usually done in grades five to eight, practice varying considerably in regard to its exact location.

Work in bent iron is quite often given to pupils in grades five to eight. This may be conducted either in the regular room or in one specially provided for the purpose. The latter is probably the more satisfactory arrangement. Construction in bent iron and wood can be combined with valuable results.

Data concerning equipment provided for bent iron work have been received from a number of schools but there is so little variation in the equipment used in teaching this process that it seems needless to enter into the details of a large number of specific cases. It will be sufficient

to give a list of tools such as investigation shows to be those generally used for this work.

For a minimum equipment and one that can be used in the grade room, the following is about what is needed, the list being made up on the basis of a class of twenty pupils:

20 flat-nose pliers.
20 round-nose pliers.
20 rulers.
6 pairs of snips.

To make this equipment more efficient the following tools may be added:

20 small iron vices with anvils.
20 small hammers.
2 Morrill's punches.
1 hand drill and drill points.
6 rivet sets.

The vises may be mounted upon 2-in. x 12-in. planks supported on wooden trestles, making a cheap and very satisfactory arrangement. The punches, drills and rivet sets are to be used for fastening with rivets in cases where the ordinary binders are not convenient or desirable. Soft iron tinner's rivets are suitable for this purpose.

In the lower grades, from the first to the fourth, a number of processes are quite generally taught, perhaps the most common being paper-cutting, paper-folding, and cardboard work. These processes are taught in the grade room and the equipment used is very simple and inexpensive. Lists of equipment provided for this work in a number of schools are given below.

EQUIPMENT FOR PAPER-CUTTING, PAPER-FOLDING AND CARDBOARD WORK.

Chicago, Ill.—Reversible desk top, Chicago cardboard knife, T-square, scissors, compasses (Solidhed), 12-in. ruler, 30-degree triangle, 45-degree triangle.
Taught in grades 1, 2, 3 and 4.

Peoria, .—(Franklin School).—Scissors, rule, pencil, compasses, triangle.
Taught in grades 1, 2, 3 and 4.

Rock Island, Ill.—Scissors, knife, belt punches, conductor's punches, eyelet sets, rules, pencil compasses, triangles.
Taught in grades 1, 2, 3 and 5.

Menomonie, Wis.—Scissors 10c., skew knife 25c., compasses 6c., sponge 1c., ruler 1c., knitting needle 1c., 45-degree triangle, 5c., 30x60-degree triangle 5c. Total 65c.
Taught in grades 1, 2, 3 and 4.

Savanna, Ill.—Scissors, triangle, pencil.
Taught in grades 1, 2, 3, 4 and 5.

Boston, Mass.—For class of 30 pupils:—30 pairs shears, 6-in.; 30 compass attachments, "Excelsior" No. 8999; 30 wood triangles, 7-in. 45-degrees; 30 rules, Hammett's No. 1023; 4 punches. 1-8-in. round hole. Total cost about $10,00.

Taught in grades 4, 5 and 6.

The above lists represent the individual equipment for each pupil in the class, with the possible exception of the punches, a limited number of which may suffice. Some kind of protection for the desk top is pesirable, particularly when doing the heavy cardboard work.

Of the other processes suitable for introduction into the lower grades little need be said here as the equipment required in connection with such processes is slight; the element of supplies is the only one that involves considerable expense.

A few words may be said in regard to the following.

Weaving.—Weaving in a simple way may be undertaken in the first grade and for this work nothing in the way of equipment is needed. The materials used are colored paper, strips of cloth, yarn, etc., and may be had at little cost or brought from home by the pupils. In the higher grades simple looms may be used. These may be constructed from cardboard or wood by the children themselves, or made by the pupils in the higher grades to be used by those in the lower. Looms for this purpose may also be purchased of dealers.

Clay-modeling.—Clay for this purpose, beaten ready for use, may be purchased at about 2c. to 3c. per pound. Clay not mixed at about 1c. to 1½c. per pound. The clay may be washed and worked over after using, making the expense very slight. Work in clay may be begun in the first grade and in consequence of the wide range of its adaptability may be continued as long as desired. It is commonly taught in the first three grades.

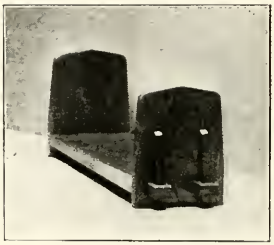
Sewing.—For the work in sewing as done in the lower grades about the only equipment needed is a pair of scissors, thimble and needles for each pupil. These may be had at a cost of about 15c. The material for carrying on the work need not be costly and here, as in weaving, much of it may be brought from home by the pupils.

Basketry and raffia work.—Basketry and raffia work is done in the grades from the second to the sixth. The materials are manipulated entirely by the hands except in cases where sewing is done when thimbles and needles should be furnished. In many localities native materials suitable for this work, such as reeds, rushes, grasses, corn husks, etc., may be gathered by the pupils and the cost of maintenance be made very low. If reeds and raffiia are purchased for this purpose the work

may prove rather more expensive than in some of the other branches mentioned.

There are numerous other processes that may be introduced as hand work in the grades but the ones already considered are those commonly taught.

In concluding this article, I wish to acknowledge my indebtedness to those superintendents and teachers who have so kindly, at the expense of considerable labor, furnished me with data upon which this study is based, and without whose cheerful co-operation its production would have been impossible.



METHODS OF WOOD–FINISHING SUITABLE FOR THE MANUAL–TRAININGSHOP.[1]

CLINTON S. VANDEUSEN.

OOD-FINISHING is a process with which the manual-training teacher should be familiar, and it is one on which there seems to be little available information of the kind desired. There is special need of such information now owing to the fact that the present tendency of development in manual-training woodwork is in the direction of small pieces of furniture which require a durable and artistic finish. Many of the methods employed by the professional wood-finisher do not seem to be suited to the manual-training shop, especially when the shop is for grammar-grade pupils. An apprenticeship of considerable time is necessary to acquire skill enough to do satisfactory work with the methods used by the professional. This requirement obviously bars such methods from use in the grades, and some will say from use in high schools also.

What is desired in our work is some method of wood-finishing that can be satisfactorily employed by the average pupil without tedious preliminary practice. This method should emphasize the structure of the wood, not cover it; should allow of considerable variation of color; should be dull in effect rather than brilliant; and should be permanent. I wish that I might present at this time such a method, but my experience while studying this subject indicates that it will require the combined efforts of many manual-training teachers to investigate the subject thoroughly before such a method can be found. However, I hope I may be able to help toward the end so much desired.

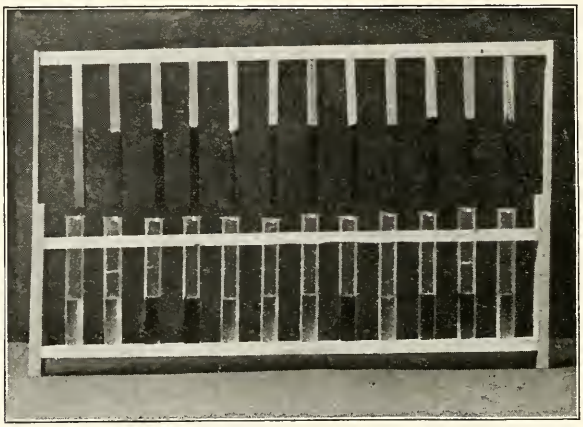
About a year ago I made several efforts to discover a satisfactory method of finishing oak by mixing dry colors in different proportions and adding various oils and liquids to prepare them for application. I also used logwood stain, acetate of iron, asphaltum varnish and a few other materials. One of the best methods tried at that time consisted of rubbing asphaltum varnish on the unfilled surface. A considerable variety of browns may be obtained by varying the consistency of the varnish by the addition of turpentine. Some of the other methods were fairly satisfactory, but many of the results were muddy in appearance, obscuring the grain rather than emphasizing it. Then, too, any rubbing

[1] Prepared for the Illinois Manual Arts Association.

		White Pine	Poplar.	Butternut	Chestnut.	Oak	Sycamore	
Concentrated Ammonia.	Color.		D	D	Br		D	
	Intensity	0	1	2	3	0	1	
	Quality.				F			
Concentrated Sulphuric Acid Specific Gravity, 1.26	Color	Gy	R	R	R	R	R	
	Intensity	3	3	3	2	3.	3	
	Quality.	G	F	F		F	F	
Dilute Sulphuric Acid Specific Gravity, 1.11	Color.	Gy	R	R	R	R	R	
	Intensity.	2	2	2	1	2	2	
	Quality.	G	F	F			G	
Concentrated Hydrochloric Acid. Specific Gravity, 1.19	Color.	Gy	D	D	D	D	D	
	Intensity.	1	1	1	1	1	1	
	Quality.	G	F				F	
Concentrated Potassium Hydrate Hydrate 4 - Water 7	Color.	Br	Br	Br	Br	Br	Br	
	Intensity.	2	2	3	3	3	3	
	Quality			G'		G'	G	
Dilute Potassium Hydrate Hydrate 2 - Water 17	Color.	Br	Br	Br	Br.	Br	Br	
	Intensity	1	1	2	2	2	2	
	Quality				G-F'		G	
Concentrated Potassium Bichromate Saturated	Color	Br	Br	Br	Br	Br	Br	
	Intensity	3	3	4	4	4	4	
	Quality.	F	G	G				
Acetate of Iron Acetic acid on iron filings	Color	Br	Br	Bl	Bl	Br	Br	
	Intensity.	2	2	4	4	2	2	
	Quality.	F-F'		G	G-F			
Oxalic Acid (with heat) Acid 1 - Water 8	Color.	Br	Br	Br	Br	Br	Br	
	Intensity.	2	2	2	2	2	2	
	Quality.	F'		F'	G'			
Ferric Chloride Chloride 1 - Water 9	Color.	Gn	Gn	Gn	Gn	Gn	Gn	
	Intensity.	3	3	4	4	4	4	
	Quality	G-F'	G	G	F'	F	G	
Potassium Hydrate on Chestnut Chips	Color.	Br	Br	Br	Br	Br	Br	
	Intensity	2	3	3	3	3	3	
	Quality.	F'	G	G		G	F	
Hot logwood solution with soda added	Color	P	P	P	P	P	P	
	Intensity.	4	4	4	3	3	4	
	Quality.	F	F			F		

Gum.	Cherry	Birch	Mahogany.	Walnut	Hard Pine.	Effect of Heat	Remarks.
D			D			No effect	Raises grain quite badly
1	0	0	1	0	0		
R	Br	R	R	R	Gy	Charred to a dead black	
3	3	3	3	3	3		
	G				G		
R	Br	R	R	R	Gy	Charred to a dead black	
2	2	2	2	2	2		
					G		
D	P	D	D		Gy	Very slight	
1	2	1	1	0	1		
		G			G		
Br	Br	Br	Br	Br	Br	Improves the set	This set has a very unsatisfactory appearance before applying the finish.
3	3	3	3	3	2		
		G			F		
Br	Br	Br	Br	Br	Br	Slight	
2	2	2	2	2	1		
		G					
Br	Br	Br	Br	Br	Br	Darkens	
4	4	4	4	4	3		
	G	F	F	F'	G'		
Br	Br	Br	Bl	Bl	Br	Darkens	Colors vary more in this set than in any of the others.
2	2	2	2	3	2		
G'F							
Br	Br	Br	Br	Br	Br	Gives browns	Color very slight before heating.
2	2	2	2	2	2		
			G'				
Gn		Gn		Gn	Gn	Darkens	Ferric Chloride gave interesting greens, but finish destroyed green effect on all but poplar & pine.
4		4		4	3		
G		F		F	G		
Br	Br	Br	R	Br	Br		
3	3	3	3	3	2		
G			G		G		
P	P	P	P	P	P		
4	4	4	4	4	4		
F	G		F	F	G		

of the surface after application seemed a detriment rather than a help. The coloring matter seemed to be on, instead of in, the wood. These results led to a different line of investigation this fall, and I decided to observe the effects of a variety of liquids on various kinds of wood. To this end I selected twelve varieties of wood and prepared a large number of pieces of each. The pieces were about a half-inch square and seven



inches long, planed and sand-papered smooth. By means of test tubes arranged in a rack as shown in the illustration I was enabled to immerse a portion of each piece in the liquid, the action of which was being investigated. The pieces were left in the liquid about ten minutes and then allowed to become thoroughly dry before further treatment. Up to this point two pieces of the same kind of wood had received the same treatment in each liquid. This provided eight sides, each of which could now be treated in a different manner. I thought it possible that some interesting results might be obtained by applying heat to the pieces after they had been treated; accordingly I arranged to heat an iron plate by gas, and by trial determined the number of seconds each variety before being dipped in the liquid could remain in a certain position near the iron without being scorched. Then the dipped pieces were placed in the same position for the same length of time, and the results noted. The most striking effect was that produced by the method described by Mr. Moore in Part V of the appendix to this article. Wood treated with sulphuric acid will be charred black when subjected to heat that would not have scorched the wood before it was so treated. This fact might

be made use of for a dead black finish, or a black design or border might be made on a piece by this method. A number of the pieces treated with heat as well as many of those treated with liquids alone seemed satisfactory at this point but many of the liquids were of such a nature that I feared the colors would not remain permanent, and so I tried to discover the effect of applying substances that would give a dull finish and might be expected to be permanent. There are several dull varnish preparations on the market which change the natural appearance of the wood but little, and are claimed to have the preservative properties of other varnishes; such a preparation called "Dutch Finish," put up by the Bridgeport Wood-Finishing Co., was tried. Rubbing with a mixture of nine parts boiled oil to one part hard oil finish was also tried, as was a mixture of nine parts boiled oil to one part japan varnish. The immediate results by the three different methods seem to be almost identical, but time only will indicate their relative merits as preservatives.

I realize that results secured in these experiments will not necessarily mean that the same results can be secured when the liquids are applied as it will be necessary to apply them in practice, but it is hoped that in many cases the change in method of application will not seriously affect the results and perhaps in other cases some new method of application may be utilized to overcome the difficulty.

As might be expected in such an investigation only a comparatively small portion of the specimens showed desirable results. The table accompanying this article with its explanation will make clear the results of my experiments up to the present time.

The letters in the first row opposite each liquid denote the general color effect, the letters having the following significance: D—Darkens the natural color, Br—Brown, Gy—Gray, R—Red, Bl—Blue, Gn—Green, P—Purple. The numbers in the second row opposite each liquid denote the intensity of the change, the O denoting no change, the change being greater as the numbers increase. The letters in the third row opposite each liquid indicate the quality of the finish. The absence of a letter indicates that the finish is of little value. F indicates fair, G, good; (1) placed by a letter indicates that the letter refers to a piece that was heated before the finish was applied.

The following liquids were used in addition to those mentioned in the table: cold water, hot water, benzine, gasoline, turpentine, dilute hydrochloric acid, boiled oil and japan, but with no desirable results except with nitric acid on hard pine. By referring to the illustration it will be noticed that potassium hydrate in the fourth test tube from the left is

considerably colored. This suggested the use of the potassium hydrate colored with chestnut chips given in the table. In making the solutions the parts given were determined by weight.

APPENDIX.

When asked to prepare this paper the wish was expressed that in addition to what I could give from my own experience and investigation, I also collect information in regard to methods that have been successfully employed by others. This information I place in this appendix where due credit may be given those who have so kindly contributed from their experience.

PART I

The following outline of the methods employed by the professional wood-finisher was furnished by W. F. Vroom of New York City, and manual-training teachers will find it helpful to have the important points of this work so clearly stated.

WOOD FINISHING.

Purposes. I—For preservation. II—For beauty of finish.

Principal classes of finishing materials. I—(Opaque) Paints. II—(Transparent) (a) Oils, (b) Varnishes, (c) Stains. Stains are usually of little value for preservation; the other materials are useful for both purposes.

(a) Oils. Linseed oil, raw or boiled, is the kind chiefly used in wood finishing. Oils alone are seldom used nowadays, though in early times a fine, soft polish, perhaps unequaled for durability, was obtained by repeatedly rubbing the surface with boiled oil applied with a woolen cloth. This was a process of months.

(b) Varnishes. These, though the names under which they are sold are of endless variety, consist simply of some hard gum cut with turpentine, alcohol or other suitable solvent. The gums used are of various kinds, from the finer grades such as copal or dammar, down to the common rosin. Shellac being insoluable in turpentine, is cut with alcohol.

Methods of applying varnish may be classed under three general heads: (1) flowing or laying on with brush; (2) applying with the brush and rubbing down to a polish; (3) applying with a pad and bodying up to a polish.

Filling is necessary in most cases to form a base for the final finishing. Open-grained woods especially, such as oak, rosewood, ash, etc., require this process, the purpose of which is to fill the pores of the wood, leaving a level surface so that the finishing material will not sink in.

Fillers are made of a great variety of materials, including whiting, plaster of paris, corn starch, etc. These are usually mixed with oil and turpentine and a little japan varnish added as a dryer. The filler is rubbed on and rubbed in, and the surplus rubbed off or scraped off. Rubbing in with fine sand paper is a good plan. A coat of shellac helps greatly to form a hard, level surface for the varnish. This should be gone over when dry, with fine sand paper.

(1) *Flowing.* This, when skilfully done with good varnish, gives a brilliant polish. It is simply the application of a heavy coat of varnish with a fine brush. This should

be done in a warm room as free as possible from dust. When the surface to be finished may be placed in a horizontal position a heavier coat may be applied. Varnishing with a brush, without the addition of a "flowing coat," gives a more or less satisfactory finish if a bright finish is desired.

(2) *Rubbing down.* For a varnish polish the wood is filled, coated several times (must be allowed to dry hard before each coat) with hard rubbing varnish, and rubbed down with pumice stone and water applied with a felt rubber. When a thoroughly level surface has been obtained the polish is brought out with rotten stone and sweet oil. A cheap varnish known as "hard oil finish" gives a fairly good dull polish when treated in this way.

A similar method is employed in producing the less brilliant, but very satisfactory shellac polish. The rubbing is done, in this case, with pumice and raw linseed oil. This gives a fine "dead finish," but a brighter effect may be obtained, if desired, by using rotton stone after the pumice.

(3) *Bodying up.* French polishing is the most important finish in which this method is employed. A full description of this art cannot be given here. but it may be said briefly that it consists in rubbing the material *on* instead of rubbing it *off* as in the last process mentioned. The material used is ordinary shellac varnish, orange or white, sometimes with the addition of other gums. This is applied with a pad of cotton, a few drops of raw linseed oil being used occasionally to prevent sticking. The work is gone over time after time with curved strokes which must never be allowed to come to a stop.

Wax polishing is a similar process in so far as it consists in adding the material until a polish is obtained, and not in scouring it down, as with varnish. Beeswax is cut with turpentine until of the consistency of paste and applied with a rag. A thick, soft brush is also used in rubbing wax to a polish. A finish suitable for some purposes may be produced on non-porous woods by the rubbing-on process, using a quick drying varnish in combination with boiled linseed oil.

(c) Staining. Varieties of stains and methods of staining are innumerable. The kind of stain in most general use is composed of pigments mixed with oil and turpentine. This may be applied with a brush or rag. Water stains are also used, but they raise the grain of the wood[1] and are more difficult to apply evenly than the oil stains. Hard and close grained woods take stain better than the soft or porous varieties. Crooked grain woods, especially if soft, and resinous woods, are not well adapted for staining. Stains are sometimes mixed with other finishing materials with good effect and economy of time.

Mr. Vroom also reported a method of finishing which seems to be coming into quite extensive use. Its ease of application will surely count in its favor for school work. It is as follows: The entire surface is rubbed with oil stain mixed to produce the desired body color. After this dries, a design may be applied in water color. The whole is then given a wax polish, which may be produced very satisfactorily by using the prepared wax sold in tin cans. For oil colors, some use the artists'

[1] This difficulty can be overcome or at least greatly lessened by wetting the surface of the wood and after it has dried sandpapering it again before applying the stain—*C. S. V. D.*

tubes, and others use the colors that are ground in oil and are sold in pound cans.

PART II.

The methods here explained have been used by A. B. Green of Pratt Institute, Brooklyn, N. Y., and have given satisfactory results.

(a) Mr. Green places great emphasis on the preparation of the wood for the finish. This is accomplished by the use of the plane, scraper and sandpaper so that no imperfections are left in the surface to be finished. For dark woods, as mahogany, walnut, and sweet gum, a thin coat of paraffine oil is used first. This gives more character to the wood and brings out the grain, but must be omitted on white woods, such as holly, as it discolors them. Following the oil a coat of thin white shellac is applied, allowed to dry over night and then sandpapered with oo sandpaper to a smooth finish. The shellacking and sandpapering are repeated as many times as are necessary to secure the desired effect. Four coats usually give good results. It is then rubbed down with the finest powdered pumice stone and raw linsed oil, with a piece of clean waste; and finally rubbed with a clean piece of waste and a very little oil. The shellac used for this finish should be that cut with grain alcohol and should be applied hurriedly but carefully with a good clean brush. For use on white woods a pinch of oxalic acid crystals allowed to dissolve will clear the shellac.

(b) The following is another method which requires almost no skill in application and gives satisfactory results: First, use paraffine oil as in the preceding method. The wood is then rubbed with a pomade of prepared wax which is made as follows: Heat two ounces each of white and yellow beeswax over a slow fire in a clean vessel (agate ware is good) and when it is all melted, add four ounces of turpentine. Stir the whole until it is entirely cool. *Keep the turpentine away from fire.*

PART III.

J. E. Painter of Minneapolis, Minn., reports that he has had very good results in finishing cabinet work by using the wood tints put up by the Chicago Varnish Co., also the weathered oak stain and finish made by Pratt & Lambert. The wood tints are sold under the following names: weathered oak, colonial oak, mission oak, dark brown No. 310 and dark mahogany No. 300. The oak stains are brushed on the unfilled surface of the wood and after twenty-four hours a coat of dead-lac (which is a dull varnish preparation manufactured by the Chicago Varnish Co.) is applied with a soft brush. The dark brown and mahogany tints are

suitable for soft woods, as well as some hard woods. When used on soft woods they should be covered with a coat of shellac before the dead-lac is applied. With the Pratt & Lambert stain a large variety of colors may be obtained, from a rich brown to a dead black. Following the stain the "finish" is applied, which is a varnish preparation that protects the stain. This finish requires a little more skill than the wood tints.

The wood tints have been used at Bradley Institute with good success.

PART IV.

The following methods have been used successfully by Chas. H. Bailey of The James Millikin University at Decatur, Ill.

(a) Dead black stain for hard or soft woods:

Apply two coats of hot logwood solution and allow the first coat to dry before the second is applied. When the second coat of logwood solution is dry apply a solution of acetate of iron, made by dissolving iron fillings in hot vinnegar or in acetic acid. This has a chemical action on the logwood that turns it black. After drying, the surface may be finished by rubbing in a little raw linseed oil or may be finished with wax.

(b) To improve the color of common mahogany:

Apply to the surface a solution of pottasium hydrate or lye, the strength of the solution necessary to give the desired color to be determined by previously experimenting on a piece of waste stock of the same kind as that to be finished. Fill with a dark paste wood-filler, varnish, and polish with shellac.

PART V.

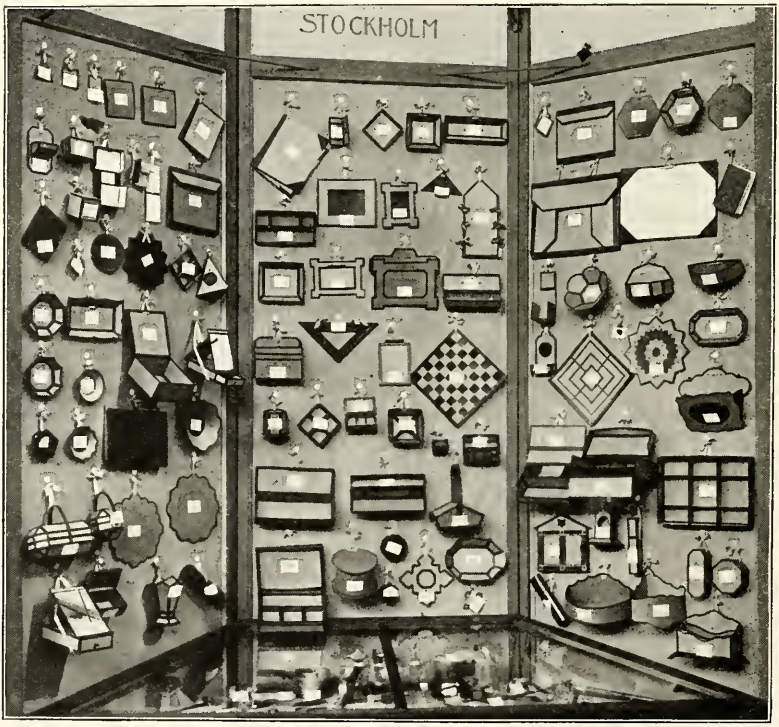
The following method of finishing spruce has been used with good results by Harris W. Moore of Watertown, Mass. It is suited only to surfaces not subjected to serious wear. Mr. Moore received his suggestion for this method from some Japanese work he had seen.

The surface of the spruce is wet with dilute sulphuric acid and allowed to dry. It is then held over a heated stove until the whole surface as black as charcoal (which it really is). Next, with a stiff scrubbing brush remove all the charcoal that will come off. The surface is then oiled with linseed oil and beeswax. The resulting effect is pleasing in bringing out the harder grain in black and the remainder in a brownish tone.

PART VI.

The aging of oak by the use of strong ammonia fumes has been used with marked success at Bradley Institute. Probably many manual-training teachers are familar with it, but so good a method ought to be

included in this article. The piece to be fumed is placed, with an evaporating dish containing concentrated ammonia, in a box that can be closed air-tight. It is left in the box twelve hours or more, and then finished with a wax polish similar to the one described in Part II-b of this appendix. It gives to the oak a rich lustrous brown color. The fumes penetrate the wood to a considerable depth, so that the nicking of pieces finished by this method does not expose a surface different from the exterior, as is the case with most finishes.



THE MANUAL-ARTS EXHIBIT AT THE ST. LOUIS FAIR.

GUSTAVUS P. DRUECK, JR.
Chicago Normal School.

O all teachers interested in the creative, or constructive side of education the exhibition of manual-arts work in the educational building at the St. Louis fair was exceedingly instructive. When one stops to think that the first educational handwork ever shown in this country was at the Centennial Exposition held at Philadelphia in 1876, he is impressed with the rapid growth and the influence exerted by this new phase of education. It is a forceful argument for manual training, that in the small space of about twenty-five years this work should have come to command such respect from educators as to bring forth the large display of handwork shown at St. Louis.

In many of the state exhibits the handwork was the most extensive and attractive part. Colorado, New York, Missouri, Illinois, Minnesota and Massachusetts had very large and interesting displays. The work shown extended from the kindergarten through the technical colleges. There were exhibits from the reform schools, and its use was manifested also in the schools for teaching the deaf and dumb. In general, much care and thought was taken in the selection and grouping of the work so that it might easily be studied.

The constructions in cardboard and paper for the kindergarten and lower grades consisted of work in various colored materials, of cutting, weaving, and pasting simple forms — toys, decorations, useful objects, and the depicting of stories. The work, though well made, seemed too flimsy and frail, and except for the weaving and story telling, gave very little opportunity for original thought on the part of the child. It was too much on the lines of "busy work." I believe the exhibit of Sweden, (page 102) if somewhat simplified, would be more in line with what we need than the flimsy constructions shown in our state exhibits. The Swedish exhibit, unfortunately, was not the work of children, as most of the other exhibits appeared to be, but consisted of models made by instructors. These were strong objects of use and were of good size. The course had the appearance of sameness because all the models were constructed of cardboard of the same color and the parts were fastened together by means of black passe-par-tout paper; but this fault could easily be rectified.

The work in thin woods of the lower grammar grades was good and showed that this kind of work had been carefully developed. The objects showed progressiveness in construction, beauty and simplicity of form and originality of design—something which cannot be said of much of the more advanced woodwork. The wood generally used was basswood. Pratt Institute showed examples on which stains had been used to accent the slight grain of the wood, but most of the work in the other exhibits was unfinished and was shown in the natural color of the wood.

Weaving, both in baskets and with looms, was well exhibited; very little beadwork was to be seen. The clay and pottery was good, though meager. The leather work, though not extensively exhibited, was well done and very well adapted to such problems as book covers, pocket-books and belts.

The metalwork for the grade schools showed that more attention needs to be paid to this material for construction work. Though the Venetian iron work was good, it was not to be seen in most of the displays, while the sheet-metal work appeared in but two or three places and most of it was crude, consisting of perforated lamp shades in plain copper or brass or of poorly designed and hammered sconces of the same material. I believe, however, that as our teachers become more skilled in this line of metalwork it will come forward more rapidly, for, like clay, it gives an opportunity for careful designing and modeling and, further, most beautiful effects can be produced by coloring both brass and copper with chemical solutions.

Although woodwork for children in the higher grades has been taught mostly by skilled teachers, it is surprising that the various exhibits should show so little variety. The same objects in identically the same design and proportions could be seen in exhibits from many parts of the world. This is wrong, for it indicates that the child and the local interests must have been entirely neglected and that the teacher could not have given his best efforts, else he would have originated problems or even a course to suit the conditions at his home school. To plan a problem with the children, their environments in mind, is to me one of the most interesting duties of a teacher of manual training.

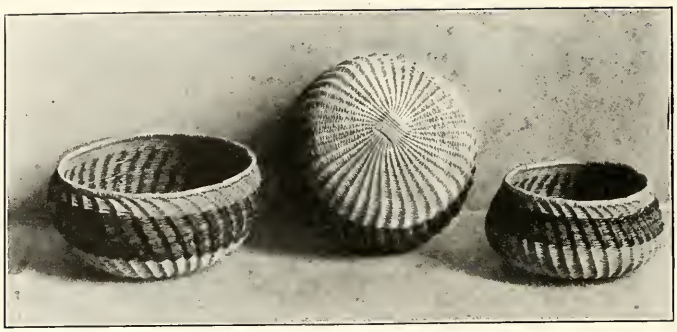
More thought should be given to simple means of finishing woodwork with stains, fillers, and wax, also to the use of simple, harmonious decorations. Many exhibits made no use of these. In one display I noticed that the good tool work was spoilt by the use of red and green paint. Too often the carving was so elaborate that it must have been exceedingly wearying to the young workman. Moreover, this carving

was not always used to decorate some useful object, but often appeared as a mere plaque, which must have been made only to gain skill in the use of the carving tools. In some cases pyrography was used as a means of decoration.

The high-school work from the wood-shop, foundry, blacksmith and machine shops showed a unity of feeling among the teachers of this work as to the general lines it should take. I mean by this that their work was technical. The problems were generally parts of larger problems and often only exercises to give skill in the use of certain tools or machines, or to demonstrate certain principles. The work in turning was not as satisfactory to me as the other work; often too much building up of pretty effects by combinations of light and dark woods took the place of better problems. Turning applied to pattern work is the best use to which this instruction in machine work can be applied, and requires more thought than the turning of plates, Indian clubs and goblets, that call to mind the appearance of the "crazy-patch-work" of our mothers and grandmothers. The work shown in joinery was very good, but I believe it is time for manual-training teachers to apply more generally these joints to simple projects so that the results may be of use.

The New York exhibit showed a kind of work that needs more attention. I refer to constructions that may be used for illustrating science work. Very little of this work was shown and it was gratifying to see New York have so large an exhibit of it. Most boys are exceedingly interested in the scientific problems of the age, especially concerning electricity, and will enter readily into construction work involving these problems.

In summing up the manual-arts work of our public schools as it was shown at St. Louis, we find that more stable constructions are needed in the cardboard and paper work and less "busy work." The thin woodwork is good and may be broadened by the use of stains and simple carving. The Venetian iron work needs originality and, with sheet-metal work, should be more generally introduced. The weaving and basketry is of a high order, while the bench woodwork should possess more originality, meet better local needs and desires and be less the copying of published problems. The wood-turning needs to be related more to pattern-making, and science problems should be introduced more generally.



COIL RATTAN BASKET.

ADELAIDE MICKEL.

FOR such a basket as is shown in the above illustration the following materials are necessary: Twenty spokes of No. 2 rattan, each 22 in. long; a sufficient amount of No. 2 rattan for the coil; and raffia both natural and colored. Find the center of the spokes, and split ten of them through the center for 1 in. (See A.) Sharpen to wedge-shape one end of each of the other ten spokes. Soak spokes in warm water until tough and the coil until very pliable. Push the sharpened spokes through the split spokes, to the center, thus fastening all together in the form of a cross. (See B.)

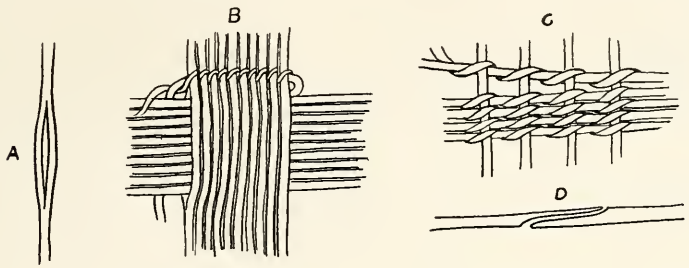
Take a piece of the coil, sharpen one end and insert this end in one end of the split in the spokes (See B); next take a strand of raffia and bind the coil to the first spoke by winding it over both coil and spoke (See C); then bind to the next spoke and so on, always keeping the rattan coil on the inside of the basket. Hold the work so that the spokes are toward you. Keep the spokes at equal distances apart. The convolutions of the coil are brought very close together and as the weaving progresses the spokes bend forward in the direction the weaving takes, producing a spiral effect on the outside of the basket. (See illustration.)

To splice the coil, cut the end of the old piece wedge-shaped for 2 in., also the end of the new piece; overlap the ends to form a continuous coil

So far as is known to the Editor, the author was the first person to use the method of making a coil basket described in this article. Though the method is not suited to use in the primary school, it has found favor with advanced students because it takes less time than the many methods in common use.—*Editor.*

(See D). To splice the raffia weaver, lay the small end of the new weaver beside the old weaver for about 3 in., and weave the two together.

When the bottom of the basket is 7 in. in diameter, wet the spokes to make them pliable, and turn them up to make a gradual flare or curve. To do this place each spoke between the thumb and fore-finger, draw it



through to give it the desired curve. Continue to bind the coil to the spokes as before, but draw the coil tighter. When the sides are 1½ in. high use colored raffia to bind the coil to the spokes. This may be used to form a band 2½ in. deep after which the uncolored raffia is used to finish the basket. The coil should not be held as tight near the center of the side. This will permit the spokes to spread and thus form the curve of the side of the basket. But the coil should be drawn tighter again as it nears the top of the basket. This draws the spokes closer together and thus completes the curve.

When the basket is about 5 in. deep, bind one row of the coil on the outside of the spokes in the same way as it was bound on the inside. Cut off the coil long enough to go around once more. Cut a notch on the left side of each spoke close to the last row of coil. Wet the spokes to make them very pliable. Thread a darning needle with raffia and bind the loose coil to the last row of coil on the basket. When doing this, bind in the spokes as follows: First bend over one spoke to the left and bind it in with the two coils. When you reach spoke No. 2, spoke No. 1 is cut off and spoke No. 2 is placed with the coils and wound together to spoke No. 3 where it is cut off. Continue this around the basket. Cut off the end of the coil, letting it come to a point; keeping the stitches very close. Fasten the raffia at the end by winding back for a short distance.

The methods employed in this basket can be applied to a variety of other forms.

EDITORIAL.

Our Associations and Their Transactions

East and West there are now some half dozen Art and Manual Training Teachers' Associations. Most of these are as yet but of a few years. Their history is still to make. What of it is already made is contained in a few slim volumes of transactions. Cheaply printed, as a rule, the latter are not distinguished by excellence of form, while their matter includes few articles which may fairly be said to be of serious professional worth. Even of these few, a number are from the pens of those who have been called in from without to speak with an authority born of high standing in other fields.

Yet there are many diligent students among the teachers of the Arts and the field of their study has in it great spaces, as yet scarce touched by plow or harrow. What then is the reason of the indifferent standards of the literature which represents them? It is not far to seek. Broadly it may be said to be due to a lack of professional pride. This agrees to the acceptance of papers of modest worth. With this lack of pride there is in many cases, a lack of business acumen equal to the task of financing and publishing the transactions in attractive and permanent form.

More immediately the difficulty arises from poor organization. This leaves till the last moment the completion of programs of meetings and thus prevents adequate preparation on the part of the writers. Directly productive of hasty and ill-considered work, such executive shortcoming is much to be deprecated. Papers of value cannot be prepared unless definite problems are offered and ample time allowed for their study. Too much of the work now done is desultory. Better results can only be secured by making it continuous.

Every organization of the Arts should have some officers charged with the business of developing the professional work of the society. As a board of editors, these members should hold office through successive administrations. Theirs should be the duty of preparing, long in advance, matter for the annual programs. Theirs should be the function to determine the questions to be considered, to arrange for their development, to stimulate writers to collate and sift material, study bibliographies, and make the experiments and records necessary to the production of papers of worth.

Such a board would be an invaluable addition to every Arts' association. Composed of three or four well-advised and enthusiastic members it would serve as would nothing else, to raise higher standards of professional work and study. With a little force and foresight, and a little financeering, the society so officered would soon be in a position to offer its transactions well printed, bound and illustrated, and so full of valuable matter that a sale sufficient to defray their cost could be found among other teachers anxious to advise themselves in regard to the development of the "special subjects.' Surely there are some in authority in our societies, equal to such a hazard of new fortunes. —*H.*

It is a mistake to become so absorbed in developing one's subject that one can't stop to make sure it's developing one's pupils.

Industrial Art or Manual Training or (?). "What's in a name?" Something to talk about at all events; and by such discussion, if we do not discover a new and more suitable name for this department of education, we may at least derive a better appreciation of the true meaning of the old one. The manual-training idea has certainly grown to include much more than it did at first. It no longer means merely the training of the mind through the hand, though that view of it is not to be lost sight of in the expansion of the original idea. Constructive work in the schoolroom has come to be regarded as something more than an instrument of mental training. It means more than the exercise of the constructive faculties, more than the peculiar training which the proper use of tools and constructive materials gives, more than the motor education which results from such exercise, however valuable all these may be. Constructive work, properly planned and carried out, is not only disciplinary, but it also furnishes the mind with knowledge. It has a useful content. It brings the apt pupil into close touch with the realities of an industrial age. It gives a culture appropriate to the life of the times. Hence it is proposed to abandon the old name, Manual Training, and substitute for it Industrial Art.

There is much to commend the new name suggested. Its appropriateness and its possible influence for good upon the "nature and spirit" of the work it names or describes was clearly pointed out in the editorial pages of the foregoing number of this Magazine. The arguments there made for the adoption, if possible, of a more comprehensive term than Manual Training must appeal to every thoughtful teacher and to every student of

modern education. But it is not easy to change an established name, even if it is not altogether satisfactory. It is much easier to give it a new and true meaning. Into old bottles we should not put new wine. But words and combinations of words are not bottles. Once well established in the popular vocabulary, they cannot be easily cast aside. Their content may change, sometimes beyond recognition; but the words persist. So it may be with the term Manual Training.

The term Industrial Art seems to the writer to contain one unfortunate element. It may invite too much attention to the subject matter and thus detract somewhat from educational aims and results. Every true friend of the new education knows how the cause has suffered from the narrow conception of manual training as a subject of instruction, like algebra or physics, in place of the broad view of it as an educational policy, affecting in some measure the work of the entire school. We have heard people speak of "teaching manual training" in the grammar school and in the high school as though it were a subject in the curriculum rather than, as it actually is, the most important modern development of educational philosophy and practice. Except in the training of teachers we do not teach manual training; but we teach many things through manual training. We do not ordinarily speak of teaching education. Why should we speak of teaching manual training, which is one of the great departments of education? Will the term Industrial Art help us out of this difficulty? Those of us who believe in thorough, systematic, and complete manual training, who advocate the independent manual-training school as opposed to weak apologies in the shape of departments, which, as is often said, "teach manual training," will earnestly wish that it might do so. But it seems to the writer that it will take more than a new name to teach some people what manual training really means. —*IV.*

The millennium of the Arts would be hastened an eon or so, if every specialist would devote a year to studying that part of the curriculum not included in his specialty.

THE decorative initials in this issue were contributed by Edwin V. Lawrence, of Bradley Polytechnic Institute.

Intellectual dyspepsia is not uncommon in the adolescent. There's nothing like a tonic course in manual work as a cure.

ASSOCIATIONS

SCHOOL CRAFTS CLUB

The School Crafts Club of New York city held its first stated meeting of the season at the hotel Brevoort, on Friday, Nov. 11. At the business meeting three new members were elected and the report of the committee on visiting factories received. This report provides for bi-monthly visits of the club to various workshops and manufacturing establishments. A visit to the John Williams Iron Works was announced for Nov. 19. The program of the evening was then taken up, Mr. James Hall in the chair.

Victor I. Shin gave a brief account of the manual-arts exhibits at St. Louis. The remarkable prominence given to this phase of the educational movement of the day indicates the wide-spread interest being taken in it throughout the country. One could not but feel admiration for the earnestness and zeal of its promotors and satisfaction at the hold the idea had taken in the minds of the public. Yet there was evident a great diversity of opinion as to the purpose of the manual arts. Much of the exhibit manifested inadequate conception of purpose and insufficient qualification to instruct, although done in the best of spirit and with the most earnest endeavor. The work of some localities was imitative; the trades idea held sway in others; still others were dominated by the art-school idea.

Many kinds of results were in evidence, from the young-ladies-boarding-school type to that which was rich in opportunity for development. The arts and crafts idea, viz., the union of the artist and skilled workman in the production of something useful, having a beauty consistent with its use and related to the daily experience of the life in the home or community, was slowly establishing a place in the school curriculum in many cities and towns.

The personal point of view too much dominated or dictated purpose and aim. There should be a greater and more concerted effort to interpret the laws of mental development which are to be seen in outline at least. With these as fundamental principles, and the opportunities of the life of the home and community as a stimulus, the pupil will be led through more and more complex stages of devolopment which will go far to fit him in his maturity to meet promptly and successfully all the daily circumstances of life.

Louis Rouillion gave a graphic and interesting resume of the July meetings of the Eastern Manual Training Association in Philadelphia, a condensed report of which appeared in the October number of the *Manual Training Magazine*. The most important meeting of the convention was, in Mr. Rouillion's opinion, that devoted to domestic science and art. The papers read at that meeting were a valuable contribution to the literature of manual training. The speaker then called attention to a new clause in the constitution of the Association which provides for affiliated local societies, suggesting that the School Crafts Club take steps toward such an alliance with the Association. In conclusion Mr. Roullion spoke in glowing terms of the cordial welcome extended to the Association by the mayor of the city

the representatives of various educational institutions and others—a welcome which indicated at once the hospitality of the people and the deep interest in the educational movement which the Association represents.

Following the reports from St. Louis and Philadelphia was another from Switzerland, by Walter M. Mohr, who gave his impressions of the Art Teachers' Congress at Berne. The exhibits at this conference were not fully representative, being mainly such as were needed to illustrate the papers read. The only work shown in the manual training line was from the United States. Here, as in St. Louis, there seemed a lack of definite purpose in the work. Progress was somewhat impeded in Europe by the fact that teachers were not free to try experiments. There no new idea was admitted unless its success seemed certain, whereas in this country the teacher is free to try and try again. Professor Churchill was warmly applauded at the Berne Congress when he urged the better education of drawing teachers in the art of teaching. The drawing courses in European schools were extremely formal, consisting of a large number of carefully graded exercises. The correlation of design and color work with manual training had been little considered. Mr. Mohr believed that the spirit of the Congress, which is in the hands of earnest and energetic men, promised much for the future of art education.

Another review of the work of the Berne Congress was given by Herman Bucher, who pointed out the essential difference between the American ideas relative to the teaching of drawing in public schools on the one hand and those of Continental Europe on the other. The present publication of the new Prang books on drawing for the public schools in this country indicates the growth of the more modern methods, which recognize the laws of mental development as the basis upon which the course of study should be framed. In France and Germany methods are highly centralized, all schools using only the authorized courses of study, and following an approximately uniform curriculum, particularly in France.

Mr. Bucher then read a report of the proceedings of the Congress written by a French delegate, which showed clearly the trend of thought on the subject of art teaching. The French system, of which an elaborate exposition was laid before the Congress, is based upon a thorough course in projection and perspective with preliminary exercises in drawing straight and curved lines, mechanically and freehand. As one of its advocates declared, "it is founded upon laws and principles of a grammatical nature." The opposite view, and the one which was finally endorsed by the Congress, was thus summed up by M. Guebin: "that drawing, in its manifold expressions and variations must reflect the world in which the child lives; that the power to reproduce pictorially should be its mission; that the practice of drawing must have all the characteristics of a language; that its application, its use, like language proper, must be easy, spontaneous, the hand to be trained to follow the thought; that it should, as the highest goal, lead to the appreciation of the beautiful in nature and man's work." Similar views were expressed by many delegates, English, French, American and German, and a set of resolutions was adopted signifying substantially the concurrence of the Congress in these principles.

The exhibits at this session of the Club consisted chiefly of work done during the summer by members. Mr. Boone showed some fine specimens of pottery made at the school of ceramics at Alford. This is one of the three schools in the U. S. where the making of pottery is taught. Until the establishment of these schools it had been difficult or impossible for teachers to learn how to do the work, since skilled

workmen in this line were generally jealous of their trade secrets, and however willing were unable to give definite, scientific instruction. Now all principles are definitely taught and easily learned.

A variety of bowls and other articles in hammered copper was shown by E. D. Griswold and others. The principles involved included hammering, sawing, enameling, soldering and riveting. Stanley Gage exhibited some very neat specimens of book-binding in cloth and leather.

Mr. Shinn showed an inkstand in German silver, a lady's comb set with jewels, and other articles of his own make, besides some Austrain and German jewelry brought from the St. Louis Exposition.

Mr. Stimpson told how copper utensils were manufactured in the mountains of Mexico, illustrating his description by a set of copper cups brought from St. Louis. Ingots of metal were beaten out into circular form, six of these laid together and formed up until approximately the desired shape, then finished separately on an anvil, and handles riveted on.

A supper and social chat brought the proceedings of the evening to a close.

CURRENT ITEMS.

CLINTON S. VAN DEUSEN.

THE National Educational Association is to meet, July 3 to 7, 1905, at Asbury Park, N. J.

THE Department of Superintendence will include manual training in its subjects for discussion at its meeting in Milwaukee. On March 2nd Dr. James P. Haney, of New York, will discuss manual training in the elementary grades.

AT the last meeting of the Eastern Manual Training Association, the plan of holding their meetings in mid-winter was proposed and the matter was left with the executive committee. Their decision is that the next meeting be held at Newark, N. J., July 6, 7 and 8, and that the following meeting be held between Christmas and New Years.

THE Western Drawing and Manual Training Association is making extraordinary plans for its April meeting at the Chicago Art Institute. Already several important exhibits are assured, and several speakers "with a message" have accepted places on the program.

THE teachers of manual training in the St. Louis public schools have organized as the St. Louis Manual Training Teachers Association. The following officers have been elected: President, W. D. Moore; vice-president, Kenneth R. Stevenson; secretary, Harry L. King; and treasurer, Louis Butler.

IT is with sorrow that we note the death of Oswald R. Eklof, on October 9th, at North Windham, Me. Mr. Eklof was instructor in woodworking in the Department of Manual Training, Teachers College, from 1898 to 1903, but during the winter of 1902–3, met with an accident which eventually was the cause of his death. Mr. Eklof was a graduate of the Institute of Pedegogy and Sloyd, Stockholm, and the Sloyd Training School of Boston. He leaves a wife and one child.

THE competition for the selection of an architect for the Carnegie Technical Schools resulted in the awarding of the first prize to Palmer & Hornbostel, of New York. Their design is considered a very fortunate solution of an unusually difficult problem. The competition was restricted to architects whose ability to execute large work had been approved in advance. Forty-four designs were submitted.

GRANT BEEBE, of the Medill High School, Chicago, has accepted a position in the St. Louis Manual Training School. He teaches mathematics and takes charge of the first-year class. In making this change Mr. Beebe goes back to his alma mater.

E. E. GOODELL, formerly of Alameda, Cal., is now director of manual training and drawing at Bangor, Me. Manual training and drawing is being introduced in all the grades. Miss Kate Weaver, a graduate of Pratt Institute, has charge of the sewing and cooking in grades six to nine, inclusive.

E. E. McCready, formerly director of manual training for the Province of New Brunswick, has accepted a position in Louisville, Ky., and his place is filled by T. B. Kidner. The success of manual-training work in New Brunswick has led to the demand for new forms of handwork (other than woodwork, etc.) which may be applied throughout the schools. This is being met by giving instruction at the Provincial Normal School in various forms of simple work which may be taken up in the schools with little trouble or expense, especially in the rural districts.

The Board of Education, of Birmingham, Ala., has recently accepted the architect's plans for a $150,000 manual-training high school.

The Isidore Newman Manual Training School is the name of a new elementary school recently opened in New Orleans. Though not a public school its curriculum is so arranged as to admit of annual interchange with the public schools without loss of time to the pupils. Its new building, which is thoroughly modern, is situated in the midst of the best residential portion of the city. The school is the pioneer of its type in New Orleans and has a rare opportunity. The principal of the school is James E. Addicott who, a few years ago, was in charge of the manual-training work at the State Normal School in San Jose, California.

Robert Harshe, director of manual training at Columbus, Ga., is on leave of absence attending Teachers' College, and Leigh Rodgers from the shops of Cincinnati University is filling the vacancy.

NEW YORK CITY.

The Hebrew Technical Institute is being enlarged by the addition of another story to meet the growing demand for space. A further addition in the form of a new building, to be used as an electrical laboratory and workshop, is in contemplation.

The department of instrument making, which was recently opened, is equipped with vises, benches, engine and speed lathes, milling machine, universal grinder, shaper, precision lathe, etc., besides all the small tools necessary for making high grade tools and dies, electrical and optical instruments.

A night school was started a year ago to teach metalworking and mechanical drawing to young men who are employed during the day.

The number of students at present enrolled at the Institute is 260.

A party of members of the School Crafts Club recently visited the John Williams Bronze Foundry and Iron Works of this city. In this foundry some of the finest bronze castings in the United States have been made, among them being the doors of the Congressional Library, those of the Boston Public Library and those of the Library of Columbia University.

All stages in the making of bronze castings were seen, including moulding, pouring, chasing and finishing. In the wrought-iron shops some exceedingly interesting forge work was seen, that which interested the visitors most being the construction of leaf forms by welding on leaf after leaf, and the shaping of acanthus forms from heavy sheet iron.

Every attention and courtesy was shown the visitors by proprietors, foreman and workmen, all of whom were ready to answer questions and explain processes in every detail. The party left with the feeling that the visit had been exceedingly interesting

and instructive and promised well for the success of this new feature in the program of the club.

THE regular monthly meeting of the corps of Shop-work Instructors was held on November 7.

A large number of drawings and models of communal exercises from the shops of Mr. Wolf and Mr. Worth were shown and discussed. It is found advisable to group these models about certain centers of interest. We may have models for use in physics, showing experiments in sound, light and mechanics; models for use in mathematics, illustrating linear and cubic measures, solutions of geometric problems, etc.; models for nature study, as butterfly cages and mounts, plant presses, window boxes, etc.

Mr. Stahl explained a color chart he had made for use by the class teacher in color drawings for the shop. Difficulty has been experienced in getting good color schemes to be applied to wood. Mr. Stahl had at the top of his chart a row of colors corresponding to the stains he uses in the shop. Underneath were spots of the various water colors to be used in getting the particular color of stain. Such a chart will prove very helpful to the class teacher.

The Director stated that all orders for supplies should be kept within the maximum of fifty cents per annum per shop pupil. He also enumerated certain phases of the work which he had continually in mind when visiting the various shops. They are, (*a*) Is cleanliness observed? (*b*) Is the equipment well kept? (*c*) To what extent is the work systemmatised — shown in the storing of lumber and materials, the keeping of necessary records, etc.? (*d*) Is the work excellent in construction? (*e*) To what point is the work of the class advanced — is it up to plan? (*f*) Is the character of instruction excellent? (*g*) Is the nature of the discipline good?

MRS. GROVER CLEVELAND laid the cornerstone, on the morning of November 11, of the Hebrew Technical School for girls, Second Avenue and Fifteenth Street. The new building, which will be ready for occupancy within a year, will accommodate five hundred girls, and will cost about four hundred thousand dollars, two hundred and fifty thousand of which has already been subscribed. It will be constructed of granite and brick, fireproof throughout, and there will be a roof garden, gymnasium, model kitchen, club rooms, and swimming pool. The auditorium will accommodate five hundred.—*School Journal.*

BOSTON.

THE manual of the committee, on manual training in Boston, about to be issued, will contain a history and description of the various forms of manual work given in the city, including the vacation schools, evening schools and other educational centers. It will be well illustrated with cuts and drawings.

THE first class, six in number, of manual-training teachers educated at the Boston Normal School will be graduated in February. Miss Mary E. Pierce is the instructor, and a separate building for more efficient work is now being finished under her supervision.

A ROOM has been fitted up for manual training in the East Boston high school and others are being fitted up in the South Boston, Charlestown, Dorchester and English high schools. This enlargement of the work is made possible by a vote of

the school committee authororizing the introduction of manual training as an elective in these schools.

THE action of the school committee authorizing the establishment of clay-modeling classes in certain schools has resulted in the appointment of Mrs. Mary G. Davis to the Rice Training School and Miss Effie Owen to the new Washington School to teach this subject. In the latter school a modeling room has been fitted up. —JOHN C. BRODHEAD.

THE Boston Manual Training Club has organized for the year with the following officers: President, Josef Sandberg; vice-president, Joseph A. Frizzell; secretary, Richard Benson; treasurer, Frank M. Leavitt; librarian, Lawrence A. Sprague. At the meeting of the Club held November 5, W. A. Baldwin, principal of the Hyannis State Normal School, read a paper on "The Development of Manual Training at Hyannis." On December 3, L. H. Martin, instructor in applied design in the Massachusetts Normal Art School, read a paper on "Artistic metalwork in the School." —RICHARD BENSON.

TEXAS.

THE Regents of the State University have made arrangements for a teachers' course in manual training. For the present the course will be given at the Austin high school under the supervision of Mr. N. S. Hunsdon, director of the Allan Manual Training School.—*Texas School Journal.*

INTEREST in manual training is growing quite rapidly in the State; Taylor and Belton have added it to their high-school work. F. W. Bopp, from the St. Louis Manual Training School, has charge in the former, and the latter is in charge of E. E. McAnelly, formerly of Devine. San Antonio has introduced manual training with Mr. Shurnway, of Denver, Colo., in charge; and Paris has voted to introduce it. This year Dallas has added cooking and sewing.

A VERY interesting program has been arranged for the manual-training section of the State Teachers' Association, which will meet during the holidays. Mr. Hunsdon is chairman of the department.

THE Allan Manual Training School at Austin has added a complete equipment for teaching the girls cooking and sewing. The school opened September 19 with an enrollment of one hundred and thirty girls and about the same number of boys. Quite a number have asked for admission since November 1, but the classes have been closed for the term. Miss Martha T. Bell, a graduate of Drexel Institute, Philadelphia, has charge of the work in Domestic Science and Domestic Art. The work at present begins in the seventh grade and extends through the high school.

MR. DAVIS, of the St. Louis Manual Training School has been elected director of manual training in the Beaumont public schools. —N. S. HUNSDON.

ILLINOIS.

THE charter members of the Illinois Manual Arts Association now number twenty-six. Of these, twenty-five have filed with the secretary statements showing their professional preparation and experience in teaching. An examination of these statements discloses a membership of unusual strength for an Association just start-

ing out upon its career. In the belief that the facts are of general interest the following brief summary is presented:

Of the twenty-five members all are graduates of high school or academy; six are graduates of normal schools; three are graduates of polytechnic institutes; five are graduates of regular college courses; and nine are graduates of university technical courses, representing Columbia, Cornell, Iowa, Northwestern, Illinois, and Michigan. In the foregoing list some are named more than once as having both college and university training.

A total of eighty-six years has been spent in professional study and training in institutions above high-school grade, an average for each member of nearly three and a half (3.44) years.

The charter members of the Association have taught in the aggregate two-hundred and eighty-eight years, an average per member of over eleven and a half (11.52) years. —WILLIAM T. BAWDEN, *Secretary-Treasurer.*

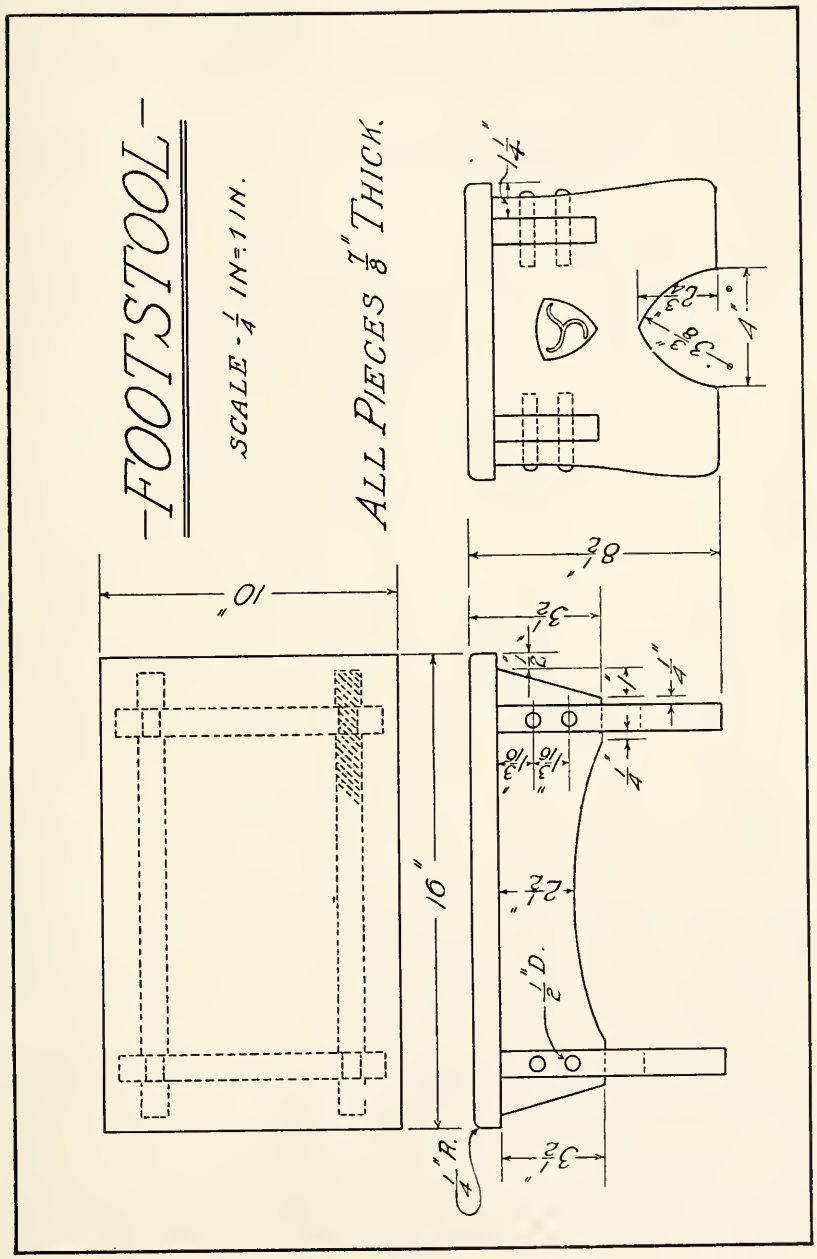
THE second annual meeting of the Illinois Manual Arts Association will be held at Bradley Polytechnic Institute, Peoria, Friday and Saturday, February 17 and 18, 1905. Friday will be spent in visiting schools and studying the exhibits which are to be arranged by the Peoria School Crafts Club. The opening session on Friday evening will take the form of a banquet. The guest of honor and leading speaker on this occasion will be Superintendent J. K. Stableton, of Bloomington, who will discuss in a practical way some of the problems he has met in introducing manual training into public schools.

On Saturday morning the following will be considered: Report of Committee on Manual Training in Rural Schools, L. A. Hatch, chairman of committee; Manual Training Equipments, by Charles H. Bailey, discussion to be opened by Clarence E. DePuy, of Lewis Institute; Wood-Finishing, by Clinton S. Van Deusen, to be discussed by E. H. Sheldon, of Chicago, and Prof. F. F. Frederick, of the University of Illinois.

The meetings of the Association are for members, but residence outside of the state does not disqualify for membership. Moreover, members can obtain permission to bring visitors if they make application two or three days before the meeting.

THE manual-training work at the Illinois Normal University has recently received added encouragement by the installing of a new band-saw, lathe, grindstone and electric motor.

UNUSUAL interest in manual training is being manifested this year at Quincy, Ill., and Superintendent Rawlins has succeeded in placing it on the same footing as other subjects. There are at present three shop centers and manual work, under the direction of August Ahrens, is carried on in all the grades as well as the high school.


-FOOTSTOOL-
SCALE - 1/4 IN. = 1 IN.
ALL PIECES 7/8" THICK.
10"
16"
18"
3/4" R.
1/2" D.

BREVITIES.

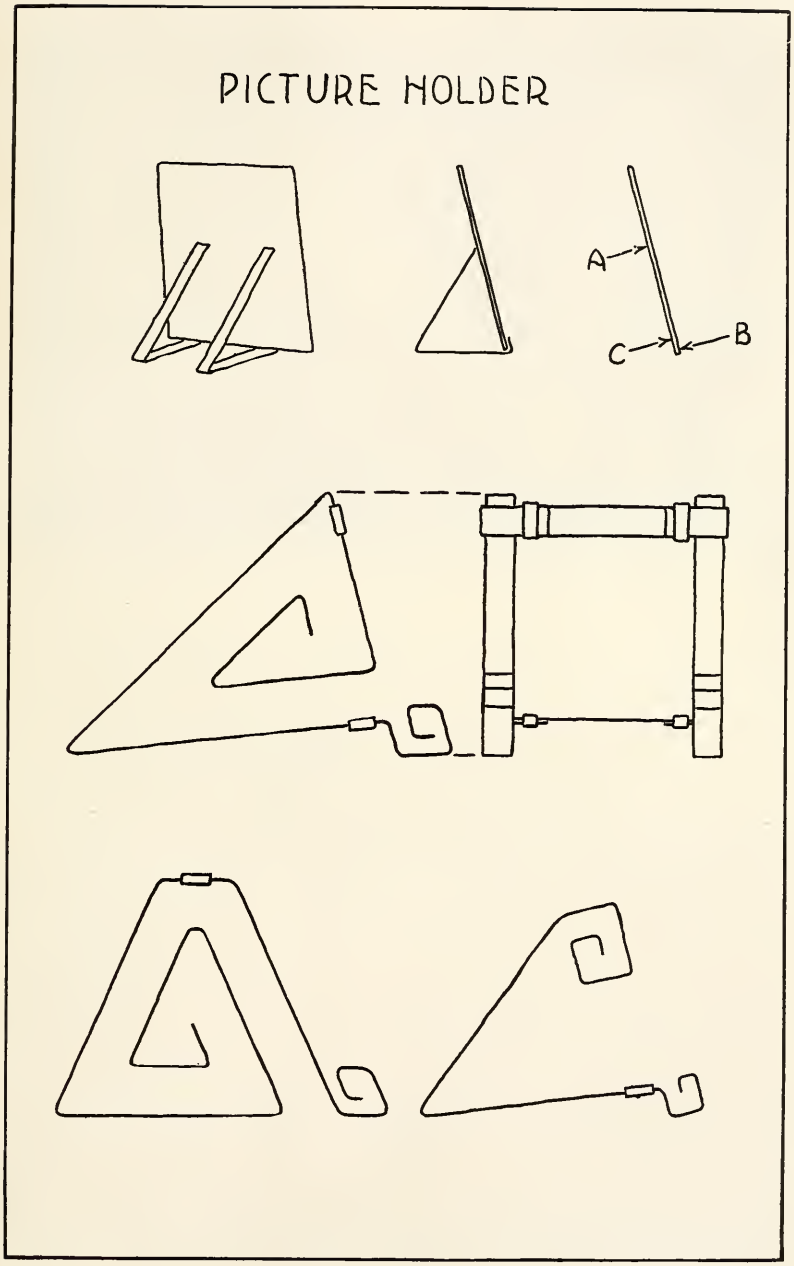
"The four R's—reading, riting, rithmetic and raffia." Thus an enthusiastic summer-school student in Chicago would modernize the famous toast of Sir William Curtis.

The footstool shown on page 74, a drawing of which is given on page 119, was designed for the Handicraft Club connected with the Neighborhood House, Peoria, Ill. The interest in this stool centers in the method of bracing which renders the stool exceedingly rigid. The Club emblem is carved on the ends of each stool that is satisfactory in workmanship. As indicating the value placed upon such a stool it may be interesting to know that when this stool is made of plain oak finished in dark brown or dull green it sells for $3.50. The book rack on page 92 was designed and constructed by Lytton S. Beman of Cleveland, Ohio. It was made of butternut.

Eight and one-half years ago a normal student designed a small bent-iron picture holder by ingeniously combining two Greek frets. At once its excellence was recognized. It was good in construction; it was convenient to use; it possessed elements of beauty; it could be made by a beginner in bent-iron work—even in the fifth grade. Since that time it has been made by increasing hundreds of boys and girls, and has been treasured by as many more parents, relatives and friends. This is a fine tribute to the designer of that picture holder, but why should the excellence of his design prevent us from leading our pupils up to the same fount of inspiration at which its creator drank? What are the essentials of a picture holder? Two braces behind and a hook or two in front, with proper connectors—or a force A (See drawing on opposite page) to keep the picture from falling over backwards, and a force B to keep it from sliding out in front. Then, if you like, you may add a force C to prevent the bottom from sliding backward. What are the essentials of the fret? A line forming an angular figure and then following itself around inside, always keeping the same distance away from itself.

Why not give your pupil the viewpoint of the designer and if practicable encourage him to create something new? The resulting picture holder may not be the equal of the time-honored design, though by suggestions you can keep it from being very poor, but the resulting boy may become an originator instead of a copyist—a leader instead of a follower. The illustration shows three designs taken from students' drawings.

Apropos of the discussion of wood-finishing, I am reminded of a visit to the studio of William H. Frye, the wood-carver. About a year ago when in Cincinnati I expressed the wish to see Mr. Frye and his work. My obliging host, well acquainted with Mr. Frye, soon ushered me into the studio of that famous artist-craftsman. I was introduced to William H. Frye the second, who, with his father and his son, each bearing the same name, have made Cincinnati a wood-carving center for three generations. On the benches, in the corners and around the walls of the room were designs and partly completed pieces of work. I recall in particular a large


PICTURE HOLDER
A
C
B

hall clock nearly complete and of rare beauty. Mr. Frye's designs have an architectural quality which gives them dignity too often lacking in elaborately wrought pieces of wood-carving.

After some minutes of most enjoyable studio talk Mr. Frye took us into an adjoining room where he kept a variety of things and a few examples of his work. My eye rested on a chair of dark oak. It had the rich color of age, yet it was so fresh and crisp that it didn't seem old. So I ventured the question:

"What a beautiful rich finish! How did you make it?"

"That's an oil finish," said the artist.

"What," said I, "didn't you use anything but linseed oil on that?"

"No," said he, "I just put on oil, and time and Cincinnati did the rest."

Since in atmospheric conditions Cincinnati is not essentially different from many other American cities, it might be well for manual-training teachers to remember Mr. Frye's formula.

Speaking of fumed oak to a professor of architecture one day, he told me how some of the rich oak interiors used to be produced in England. All the interior woodwork of the house was put in position and made ready to finish. Then an open dish of concentrated ammonia was placed in each room and the doors and windows closed and calked, making the interior as near air-tight as possible. The house was left undisturbed for two or three days. When opened the woodwork was ready for the wax or any other preservative that had been selected for use.

A BUILDER AND HIS BOAT.

By Nickolaos Vassilarios.

It is the practice in the New York schools to encourage the pupils to carry into their home-work the constructive knowledge which they gain at school. It may be thought by some, that such work, to be of value, would require a more extensive equipment of tools than the average lad could acquire. Resourcefulness and ingenuity, however, count for more than special tools or appliances.

Among the many pieces of home work made each year in the different city schools one will occasionally stand out as of especial interest because of the fertility of invention which has been displayed in its construction. The following note describes the making of a bit of "home-work" by a lad in one of the schools in the teeming tenement districts of the great east side of the city.

Simple and direct of statement, the story of the youthful builder calls for little commentary. It may not be amiss to add, however, that not quite all of the story is told. The successful experiments are noted—the unsuccessful ones, like the first attempt to cast the anchor in a papier-maché mould, are passed over in silence. Without the picture as evidence, one might gather from the narrative that the boat itself was a crude affair, reflective of the poor tools which had been used in its making. In truth, it is a model of good lines, trim and well finished—an earnest of what the ingenuity and skill of its maker may in the future produce.—*Ed.*

I WAS born August 13, 1887, in a small island of Turkey called Ikaria, near Asia Minor, but while I was very young my whole family moved to my true country —to Greece—and after that I lived at Athens. In 1900 I came here to see my parents, who had left me while I was very young, my father being here since 1893 and my mother since 1897. When I came I could not understand a single word. When I went to school the teacher first taught me the different parts of the body. Once she asked me where is your nose, and I got mixed up so I showed her my feet. That was as much as I could understand of English.

While I was in Greece I always liked to be on the mountains and playing near the sea, so I became very interested in boats. After being here two years I was in the 6 B class of P. S. No. 1. In that class we were also taking lessons in carpentry. In the next class we had a lesson in making a small boat model. After we finished that I asked the teacher to let me make a larger boat model. He did so and I finished it at the end of that term.

The teacher had told us that there would be an exhibition of home-work in the school the next term, and that he would like everybody to make something at home during vacation; so having gained some knowledge from the boat I made, I started in vacation to make a boat.

At first I got my tools, which consisted of a knife which I got from home, a file which I paid 15c for, and a key-hole saw which I bought for 35c. That completed the set of tools I used.

The next thing to do was to get the material. I went into a grocer's store and asked for an egg box, which he gave me. But afterward I found some thin strips of wood in a drug store which they were going to throw away, so I took them and then started to make the boat. I first put the strips into water and left them there for

two days, until they got soft and would bend without cracking. In the meantime I cut out of paper the templates, and traced them on the end pieces of the egg box; after that I cut them out with my key-hole saw, smoothed them up with my file, and nailed them on the keel of the boat, which was a long strip of wood nicely sandpapered. Then I was ready to nail on the sides of the boat. I took my wood, which was now very soft, out of the water and nailed it on the outside of the templates. Wherever they did not fit tight I put some cotton and a little melted tar over it. In the inside of the boat at the middle I made seats out of a cigar box, and they looked as if they were made of mahogany—one on each end. Then I made the rudder out of the bottom of a cigar box; the two hinges for the rudder I made out of a tin can. I then nailed them on the boat and put the rudder in place. In this way I finished the hull of the boat, which I was now ready to paint. I bought half a pound of white paint, half a pound of green, and half a pound of stain. First I put my boat in water and saw that it did not leak, then that part covered in water I painted green, and the rest of the outside white, except a half-rounded strip of wood which I nailed on the edges of the boat, and one on the outside about an inch from the top. That and the inside of the boat I just stained. Now the hull of the boat was finished.

The next thing to do was to visit some docks and see how the sails and masts of other boats were made and put on. I looked at them carefully, then drew them on a piece of paper and went home to do the same on my boat. I got a round stick from which I made the mast; I pointed it at the top with my file and sandpaper and stained the whole thing. I made a hole in the center of the boat with a red-hot iron, put the mast in it, and tied it with its ropes, just as on other boats. I did the same thing with the boom—pointed it at the end, stained it and tied it with the ropes.

After the mast and boom were in place I had to cut the sails. I bought a yard of white cloth and cut out the sails, then sewed the edges of them; I also sewed some rings on one side so that the mast could go through. On the other two sides I sewed small rings for the spanker-boom and spanker-gaff to go through, Then I tied on the spanker-boom and gaff, which were made of round sticks well sandpapered and stained, and tied the sails on the mast to see if they were all right. They looked all right, but there were no pulleys, so I had to make some.

I cut some square pieces of lead, then with my knife I cut them into the right shape; afterward I made a small channel, and in it I made a small hole with a nail so the ropes could pass through. In this way I made a dozen small pulleys; then I was ready to put on the sails. I tied them on the mast and passed the ropes which were tied on the sails through the small holes, and now the sails could be drawn up and down with perfect ease.

After the pulleys and sails had been put on I had to make an anchor. I first mixed up some ashes with water; I put them in a match box, made the form of an anchor in the ashes, and then I put them in the oven till they were dry. Afterward I melted some lead, took the ashes out of the oven and poured the lead in. When the lead had cooled I took it out of the ashes and with my knife and file I got it nice and smooth; and after making a hole at the end in which I attached the chain, which I got from a five-cent watch, the anchor was finished and afterward was attached to the boat.

REVIEWS.

The Art Crafts for Beginners. By Frank G. Sanford. The Century Co., New York, 1904. 5×6¾ in.; pp. 270; price, $1.20 net.

Mr. Sanford, as director of the Art Crafts at the Chautauqua Summer School, has had abundant opportunity to observe the difficulties which confront the amateur worker in a number of the applied arts. In the light of his experience he offers a manual which describes in simple language, and with many illustrations, the elementary processes of thin woodworking, pyrography, sheet-metal working, leather-tooling, bookbinding, pottery making, basketry and bead work.

Within the limits of a single small volume it were impossible to describe so many technical operations without much condensation, and from this some of the chapters suffer. The suggestions on sheetmetal work, leather work and bookbinding will, however be found sufficiently detailed to be helpful to teachers of construction work in the upper grades of elementary schools and in high schools. These particular processes lend themselves well to work which must be done with inexpensive equipments.

The author would have made his book additionally valuable had he offered in connection with each of the more important sections, a number of models or forms other than those, the making of which he describes. Theoretically the beginner once apprised as to technique, should be able to apply it in individual fashion; practically, however, he has often much to seek when the problem of original application confronts him. —*H*

General Report — Second International Congress for the Development of the Teaching of Drawing. 7×10 inches; pp. 480, illustrated; Bückler & Co., Berne.

This volume issued before the meeting of the Congress in August last, contains the papers which later served "as points of departure in the discussions." The articles are in the language in which they were written — a majority in French or German,— some dozen in English. After each paper there follows a summary in all three languages.

The Congress covered a wide field. Six questions were discussed in the "general section," which dealt with methods of teaching in elementary and secondary schools, and six in the "special section" which considered professional and technical instruction.

Naturally, a very considerable diversity appears in the papers, though perhaps less than might have been expected. The differences would have been more sharply defined had each of the twelve questions been discussed by leading English, French, German and American teachers. The great diversity in school organization in the different countries might have rendered such discussion somewhat difficult to arrange, but it is believed that a systematic attempt to secure it, would have served to unify the report. As it stands the latter is rather uncertain in the division of its subject matter, some papers appearing under headings quite different from those for which they were prepared. The treatment of certain topics is therefore brief and one-sided.

As a whole, however, the report is of great interest and value as representing the views of many well known Continental and American teachers. It cannot fail to add force both to the movement which seeks the more serious consideration of drawing, and to the associated propaganda designed to raise professional standards of training. To the enthusiastic members of the fraternity, who as officers of the association, assumed the burden and made possible the success of the Congress, the thanks of all drawing teachers are emphatically due. —*H.*

Text Books on Art Education. By Hugo B. Froelich and Bonnie E. Snow. Vol. I to VIII. The Prang Educational Co., New York and Chicago.

These volumes represent a new departure in the way of books dealing with elementary art education. They are not drawing books or teachers' manuals, but are offered as text books designed to fill a position analagous to that occupied in other phases of elementary class work by readers, grammars and arithmetics. When the series is complete one of these volumes will be available for each of the eight years of the elementary curriculum.

All the numbers are well illustrated both in black and white and in color. The exercises offered are not in the familiar 'weeks order,' 'schedule form' or 'logical sequence' of the older courses, nor are there chapters on pencil drawing, brush work, etc. Instead, each of the books presents a series of lessons in brush and pencil on landscape work, plant-form representation, action and still-life studies. These are followed by other lessons on construction and design. Each lesson is accompanied by a certain amount of text which it is designed that the pupils shall read. This matter is general and in the earlier books does not deal with methods. The later volumes (Nos. 6, 7 and 8 are still in preparation) offer detailed information for the pupil's guidance.

It has been primarily with the idea of offering good illustrative matter that these books have been prepared. They are intended to meet the needs of teachers who have felt the lack of examples of work in different media in some form which would permit individual study by pupils. Such teachers will welcome the present volumes. The illustrations are in great variety, and many well known courses of study have been drawn upon for suggestions. Color has been used in a number of cases and the elements of Dr. Ross' system of color instruction are presented in tints which suggest, if they do not duplicate, the Harvard charts.

To busy supervising teachers the series will be found helpful as a work of reference. Teachers without the assistance of a drawing supervisor will also find them of much service. Whether it will be possible to employ them profitably as working texts in the hands of the children is, of course, another question. A teacher's manual telling how they are to be used in the classroom is promised for the near future. This will be helpful. To teachers of construction work the books will be chiefly valuable because of their chapters on constructive and applied design.

—*H.*

Architectural Drawing Plates. Folio One "Details of Construction." By Frank E. Mathewson. The Taylor-Holden Co., Springfield, Mass., 1904. 9×12 in.; pp. 10; price, $ .75.

The first folio of architectural plates supplies a want felt by teachers in secondary schools for a simple, clear set of drawings with which to explain the details of building construction. It is a pleasure to find a number of drawings, or a book of

architectural plates of which twenty-five per cent are not details of historic ornament or scroll work common fifty years ago.

The plates are in folio form and of a convenient size to use in the classroom, and appear to have been drawn by a man with office as well as school experience.

—E. V. LAWRENCE.

Year Book, Council of Supervisors of the Manual Arts, 1904. 7×10 inches; pp. 200; 17 plates, and other illustrations; price, $3.00 net. Published by the Council; Edw. D. Griswold, Sec., 36 Point St., Yonkers, N. Y.

The annual issuance of the Yearbook of the Council is an event looked forward to with no small interest, by many supervisors. The present volume—the fourth to appear under the imprint of the Council—will not disappoint these teachers. It is larger than those which have preceded it, and contains papers on elementary, high and normal school methods, together with several articles of interest to teachers of all schools.

The first six articles deal with elementary school practice. That which opens the book is by Dr. Haney, the president of the society. It deals with the organization of the course of study in the Arts, and with succeeding papers by Miss Cremins (Primary Constructive Work), Mr. Griswold (Woodwork), and Mr. Mohr (Mechanical Drawing) forms a partial exposition of the highly co-ordinated scheme which has been developed by Dr. Haney in the New York City schools. Two other interesting papers are included in the elementary section, the first on primary drawing, by Mr. Sargent, state agent for drawing in Massachusetts; the second on applied design, by Mr. Batchelder.

Two papers on high-school work follow, one a description by Mr. Brown of a modern equipment for a high-school drawing room, the other by Mr. Hall, an interesting discussion of the school festival as a center for the development of high-school work in composition and decorative design.

Other suggestive articles are on normal methods, by Miss Perry; the technical high schools of Paris, by Mr. Bailey, and the manual arts in evening schools, by Mr. Davis. The volume closes with a practical paper by Mr. Daniels on the usé of the stereopticon and an extensive annotated bibliograpy, collated by Miss Pierce, which includes all the more important articles and books on the Arts published between September, 1903, and September, 1904.

This brief resumé is sufficient to show how varied and helpful are the contents of the volume. It cannot but prove stimulating and valuable to any supervising teacher. Not only are the articles definite and practical, but the Council has plainly made evident its effort to put into print important matter not to be had at the present time in other form. It is interesting to note that in announcing its publications the council lays emphasis upon the fact that no interest save that of the profession at large, profits through the sale of the Yearbooks, all receipts from copies sold contributing only to make succeeding volumes larger and better. Subscribers thus have the double satisfaction of obtaining material unique in the professional literature of the Arts and of aiding the effort of the Council to build up such a literature.

Hand Work for Kindergartens and Primary Schools. By Jane L. Hoxie Milton Bradley Co., Springfield, Mass., 1904. 5½×8¼ in., pp. 156. 89 illustrations; price, $1.00.

This is a handbook intended for the assistance of the regular teachers in the grades mentioned. It contains a series of projects (some of them new, some of them familiar) suitable for young pupils, involving the use of inexpensive materials and simple equipment. Part I is entitled Domestic Activities and contains three pages of descriptive matter wherein it is briefly suggested that a good many interesting and profitable things may be done in a kindergarten kitchen. Part II, Woodwork, presents twelve simple projects using prepared and planed lumber. The equipment includes a small work bench, 2½ ft. square and 2 ft. high for four pupils; 4 hammers, 4 small back-saws, 4 5/16 in. auger bits with gimlet handles, glue, brads. pencil, etc. Part III. Raphia Winding, constitutes over one-half of the book. There are 44 models showing various ways of using raphia as a covering on foundations of cardboard, splints and reed, and otherwise. Part IV, Drawing, consists of 22 pages of suggested exercises for use in freehand work with crayon on manila paper or blackboard. Part V, Blue Prints, in 6 pages describes the simple process of making blue prints from leaves, flowers, etc.

The book as a whole is beautifully printed on heavy calendared paper, cheaply bound but well illustrated. —WILLIAM T. BAWDEN.

Elements of General Drafting for Mechanical Engineers. By C. E. Coolidge and H. L. Freeman. John Wiley & Sons, New York, 1904; 12×9 in.; pp. 51+21 plates; price, $2.50.

Elements of Mechanical Drawing, Their Application, and a Course in Mechanical Drawing for Engineering Students. By Alpha P. Jamison. John Wiley & Sons, New York, 1904; 5¾×9 in.; pp. XII+226, including 57 plates and 82 figures in the text; price, $2.50.

As their titles indicate, both of these books are intended for engineering students. The former was written for the use of the students in the present sophomore class of Sibley College. Cornell University, and the latter for the freshman class at Purdue University. Anyone who is looking for a book of reference built somewhat on the pattern of Reinhardt's "Technic," but of more recent date, and including well chosen plates illustrating a high type of modern practice in drafting, will gladly welcome the book by Professor Coolidge. Its chapters on materials, instruments, and technic are concise and up-to-date. The whole book carries with it the atmosphere of the modern drafting room. Professor Jamison's book, on the contrary, hands down rather too many of the traditions of the schools. —*B.*

Steel Square Pocket Book. By Dwight L. Stoddard. Published by Industrial Publication Co., New York, 1904; 3½×5¼ in.; pp. 109; 112 figures; price, 50c. An effort to present the problems of the steel square in a simple, compact form. Compact it is, but the book has suffered at the hands of the printer, lacks clearness, and is not very attractive in make-up. —C. S. VAN DEUSEN.

MANUAL TRAINING MAGAZINE

APRIL, 1905

APPLIED DESIGN, I.[1]

JAMES P. HANEY.

"The mere repetition of forms over surfaces and objects without reference to proportion or structure is not decoration."—*Walter Crane.*

ONE cannot learn design from books. Design is an art, and like all arts can only be learned through practice. One may become wise in theories of design and talk glibly of balance, rhythm and harmony, but theory will not make one a designer. The student must learn first and last, and better far first than last, that the only thing that will make him a designer is practice—continuous, careful practice.

The present series of articles presents certain principles which underlie applied design. These the students must critically consider and develop, making in illustration not a few designs, but many. No principle of design can be said to be understood until the designer is able to employ it in various applications. Such practice gives skill. By comparative scrutiny to determine the best of his examples, the student gains taste, for taste is but critical sense developed through continued discrimination. As he thus develops taste he comes to possess the decorative vision—the eye which sees all forms as related masses of design. When this sense dawns, both nature and art will stand before him in a new light. He will see design where he has never seen it before—the world will be revealed to him in pattern.

DEFINITION OF DESIGN.

Design is a term used to define the relationship maintained by associated masses. The more harmonious the relationship, the better the de-

[1] Copyright, 1905, James P. Haney.

sign. Applied design is the development of such masses on a given surface. It concerns itself with a definite space, which may be divided by one line or many, or may have introdued into it one or many spots. It must, however, be understood, that the very moment any space is so divided, masses are formed within it. That moment it becomes a design.

The comprehension of this fact is fundamental to the grasping of the principles of design. It is premised, in other words, that any division of a space makes a design. Such design may be good or bad, depending

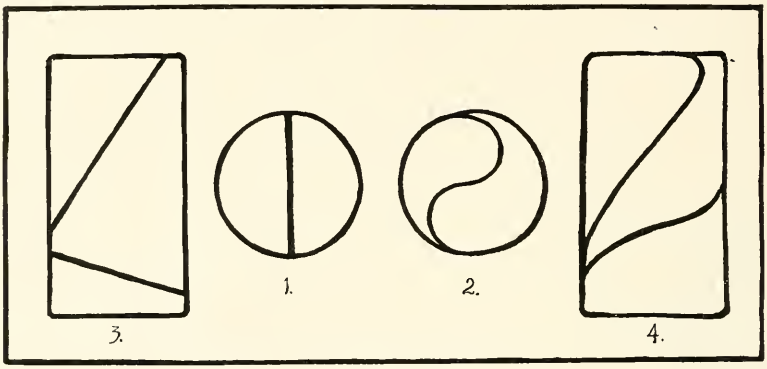


PLATE I.

on the relations of the masses which compose it. A good design is one in which the relations are pleasing. To determine how such may be established must be our next consideration.

THE DEVELOPMENT OF DESIGN.

The simplest development of related masses takes place when a space is divided by a single line. This we see in Plate I (Figure 1), where two semicircular masses are formed within a circular space. The dividing line which creates these masses meets the circle abruptly. The masses themselves are similar in form but the eye can pass with no ease from one to the other. In Figure 2, we see the same space divided by another line. The two spaces so formed are plainly related. The eye swings easily from one to the other and does not, as in Figure 1, tend constantly to escape outside the circle. In Figure 3, we see a rectangular form divided by two lines into unrelated and unattractive masses, while in Figure 4, the same form has been divided by the same number of lines into masses which have no little relation and in consequence no small attraction.

In the light of some of the suggestions which follow, the student of design will find it to his advantage to develop many decorative units from simple geometric forms (squares, oblongs, ovals, elipses, etc.), separating these into masses with one, two, or three lines. (See Plate II.) The effort should always be made to secure related masses around which the eye travels with pleasure. Each drawing should be made three or four times the size shown, that the hand may work with freedom, and a several units should be devised based upon each of the forms selected.

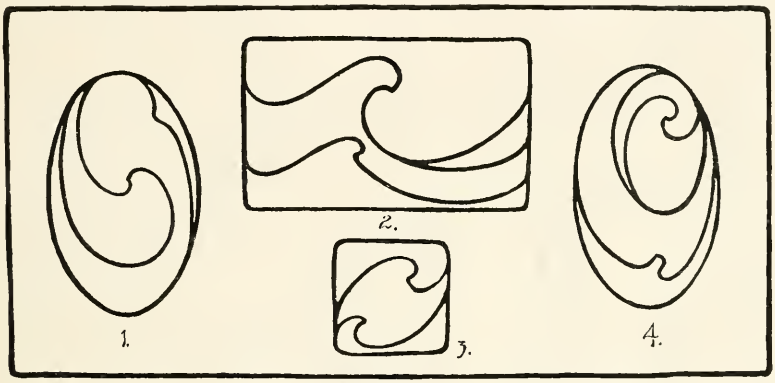


PLATE II.

The effort should be not so much to invent a great variety of forms as to develop those determined upon, in pleasing fashion. After a tentative arrangement of spaces has been made in any area, by the introduction of dividing lines, the form must be refined by study and repeated alteration of these lines until the eye accepts the masses devised as satisfactory.

Sometimes a unit will be repeatedly worked over, only to be rejected when it becomes plain to the designer that pleasing relations cannot be established on the lines proposed. As a rule, however, it will be better for the student to keep on modifying and refining till harmony results, than that he permit the problem to defeat him.

In conjunction with the making of these elementary forms or units, it is recommended that the student do no small amount of copying, using for models, prints either pictorial or decorative, (See Plate X) in which there appear well-related space formed by carefully planned lines. It is to be understood that no details of the original prints are to be copied. The student should direct his attention to the main lines in their relations to the enclosing border. He should endeavor to secure the same harmony of line and mass in his copy. It will be found of advantage to

vary exercises of this nature by repeating the same form three or four times over in different scales, enlarging a small copy or reducing a large one. Through this practice the designer will come to learn that not infrequently arrangements which satisfy the eye when of a small size appear "empty" and inadequate when enlarged.

PLATE III.

It would seem unnecessary to add that all work is to be completed in neat and careful fashion. Successful designs should be traced on rice paper and inked with a brush and india-ink.

LINE.

As an element in determining mass, line is of greatest importance. All designs may be said to have certain action or movement. Primarily it is the power which resides in line which causes and controls this movement. This power is dependent on the muscular adjustment of the eye. We see a line by looking along it and stopping at various points for imperceptibly short spaces of time. If the line is accented (Plate III, Figure 1) our eye is caught by the accented points. This muscular movement of the eye as it follows the line, conveys to the observer a sense of motion

and direction. Thus from a designer's standpoint no line is ever quiescent, but each provokes the eye to movement.

The eye it is said, tends to stop at the accents on a line. If the parts of the line between the accents be removed, as in Figure 2, the eye still travels over the dashes or dots that remain, almost as easily as it did before. Thus, as in the case of a full line, dots which form the trace of a line, control the eye, and cause it to move in one direction or another.

RHYTHMIC MOVEMENT.

The term "Rhyhm" is applied to the continuous motion given to the eye as it moves from point to point on a line or over the dots which represent the trace of a line. Relations thus established between lines or spots are defined as "rhythmic relations," and observation will show that the eye continually seeks to develop such relations between the spots and lines of every design. Thus in Figure 3, it seizes upon a few disjointed curves, but finding it easy to slip from one to another, gathers them as it were into a single unit and then, were this unit part of some larger pattern, would promptly seek to discern relations between the first form and the next at hand.

No line in a pattern may therefore be ignored, nor is any one to be added without careful consideration of the part it is going to play in conditioning the rhythm as a whole. Similarly, it may be said, that no spot is quiescent, for to each the eye travels in turn, gaining pleasure when the transitions are smooth and the relations interesting, but quickly tiring if the steps are awkard or the movements purposeless.

DIRECT AND CONTRARY MOVEMENT.

The movements occasioned by lines, may be fast or slow. Along straight lines or smooth-flowing curves the eye passes easily. Such passage is much facilitated by the action of other lines which cause movement in the same direction. Parallelism, in other words, both strengthens and quickens movements. Thus in Plate III, Figure 4, a sense of intense and rapid motion is given by two or three long and forceful curves supplemented by parallel lines which accelerate the original motion to the

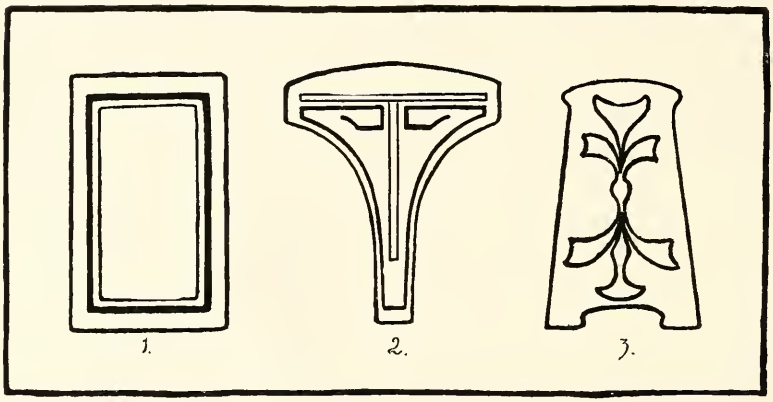


PLATE IV.

point of suggesting the tearing swirel of a stream boiling over some rock-head. In figure 5, on the other hand, opposed elements lead the eye in contrary motions and serve so to interrupt and retard all movements that the observer is left in doubt whether to look in one direction or another.

ANALYSIS OF ACTION.

The movement or action of a line may be separated into two parts, the main movement and the terminal movement. The general action is determined by the main movement, which carries the eye up or down, or around a space with force and certainty.

The border lines of a space act to enclose it, to keep the eye within it. The border may be strengthened by the lines of an enclosed design which parallel it (Plate IV, Figures 1 and 2), or weakened by lines that continually lead the eye in opposition. (Figure 3)

Lines are thus seen to have a structural power or property. The importance in design of this power can scarcely be over-emphasized. No

applied ornament can ignore the nature of the space it decorates. The student must learn to think in structural lines and masses. He must, before he breaks up any space, see in imagination the large movements

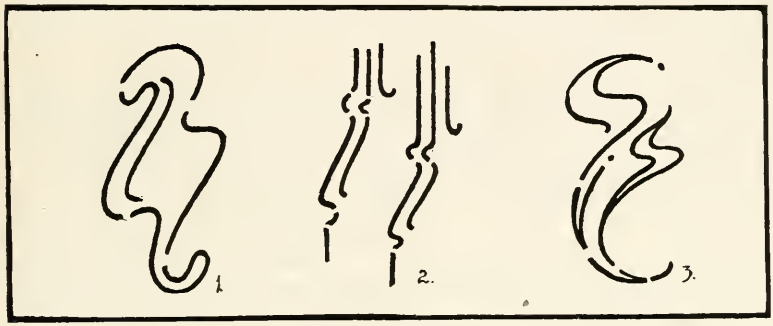


PLATE V.

which will underlie his completed design and relate it to the form to be decorated.

TRANSITIONAL MOVEMENTS OF LINES.

The ends of a line are important though they play little part in the main movement. The eye naturally seeks them to determine the purpose

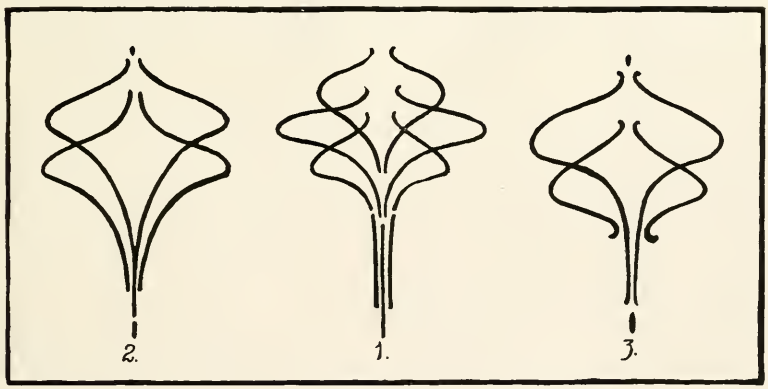


PLATE VI.

of the movement. Changes in direction in the end of a line, even though they be slight, markedly affect the rhythmic relations of such line. These terminal movements serve to guide the eye in transitions and act to connect one line with another.

To grasp this principle thoroughly the student is urged to develop a number of linear, rhythmic relations, in some of them carrying the eye directly (Plate V, Figure 1) from one line to another, in others (Figure 2) using the terminal elements only to make the transitions, and in others still, employing the spot (Figure 3) to continue the movement or to carry the eye to some related movement.

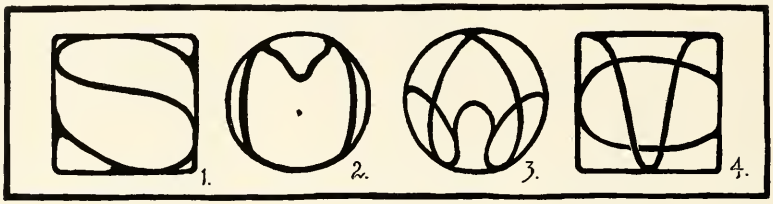


PLATE VII.

After developing many of these rhythms other problems should be solved by relating two symmetrical rhythms one to another (Plate VI, Figure 1). In this practice it will be found of advantage to take some

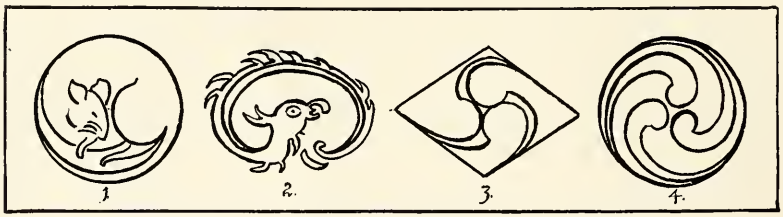


PLATE VIII. RYTHMIC UNITS FROM THE JAPANESE.

arrangement as Figure 2 and develop a variety of derived forms by slight changes in the terminal elements of the main lines. (Figure 3). In no better way can the influence of line one upon another be more readily recognized. The change of but a hair's breadth in the end of a line may make for good or evil in a design.

From the above considerations it will be evident that in a design embracing several lines no one of them can be considered apart from its neighbors. Not only do the lines of the design and the bounding lines of the space bear vital relations, but each line of the pattern is dependent to a greater or less extent on neighboring lines. Thus the designer has the power to cause the observer to look where he will. He can in his pattern lead the eye from one line to another and from one spot to another. He can give strength and simplicity by emphasizing the elements

that bind together and support the form, can give interest by felicitous rhythms, and pleasure by smooth transitions. Conversely, he can cause discomfort by forcing the eye to make abrupt changes, and positive dissatisfaction by leaving it to wander aimlessly in a maze of unrelated forms.

A line is said to be "refined" where it has had given to it the most appropriate and harmonious movement through the introduction of subtle changes in it, which serve to relate it subtly to other lines. In the broad analysis, design is said to be the relation of masses; in particular analysis it becomes a relation of the lines which bound such masses. It is the business of the designer to create the related masses by means of lines and then to refine these lines until the rhythms which relate them assume the most desirable form.

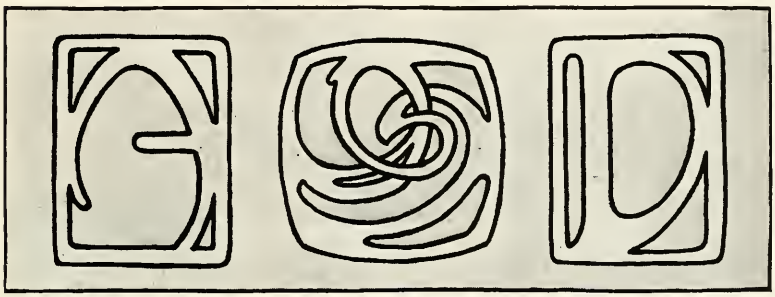


PLATE IX. INITIALS AND DESIGN FOR PIN AFTER MUCHA.

The student should now be prepared to solve the problems already suggested (Plate II). As many lines and spots should be used as may be necessary to make the most pleasing and harmonious space divisions. After some skill has been gained in the development of "free" forms, interest may be lent to this exercise by using initials (Plates VII and IX) in the evolution of these decorative spots. At first glance the simple question of securing good relations and pleasing rhythms will in the case of these initials be found one to tax the ingenuity of the cleverest. Valuable suggestions in this work may be had by referring to some of the little books of designs printed by the Japanese (Plate VIII) The fertility of invention of the Eastern designer is striking, and as the eyes of the student are opened to the skill displayed, he will be prepared to appreciate the Japanese print which, when it comes from the hands of a master, offers an illustration of the sensitive use of line than which the world has seen no better.

(To be continued.)

TEXTILE AND OTHER CRAFTS OF INDIA.[1]

CHARLES R. RICHARDS.

NOWHERE is the persistence of a handcraft after the economic reason for its existence has apparently passed away so strikingly illustrated as in the textile arts of India. Although importations from Europe and the products of the Bombay mills supply by far the greater part of the country's trade, the evidences of some form of textile industry are still to be seen in almost every community. Cotton, silk and wool are all wooven on the native hand looms although the last material is found only in the northern provinces. It is in India that the cultivation of the cotton plant appears to have originated, and cotton fabrics have formed there for centuries the staple material of clothing. The use of such fabrics is mentioned in the Rig Veda written over three thousand years ago. From India the use of the fibre for cloth-making spread to Western Asia and thence to Europe. Today English cottons have very largely supplanted the native product and the cloths still woven on the hand loom use largely English thread.

WOMAN SPINNING COTTON.

Ginning of cotton is performed with a very simple gin, consisting of two wooden rollers mounted one above the other in a frame precisely like the apparatus formerly used in our southern states and said to be still in use in places in the Kentucky mountains. The rollers in this machine are turned in opposite directions and serve to catch and draw the fibres through while the seeds are unable to pass and remain behind to drop below.

The carding of cotton is a most peculiar operation and one that seems to have no counterpart in our western methods. Before a mass of ginned cotton squats a man equipped with a singular bow-like apparatus. This affair consists, practically, of a heavy bow-shaped frame hung to the ceiling by a small rope and carrying a taut cord between its ends. This cord is pushed by the operator into the pile of cot-

[1] Copyright, Charles R. Richards, 1905.

ton and is then struck sharply by a mallet-shaped piece of wood carried in the right hand. The result of this treatment is to send the light filaments of clean cotton into the air and to the rear, leaving the heavier dirt and impurities to fall to the floor—a picturesque operation but laborious and only partially effective.

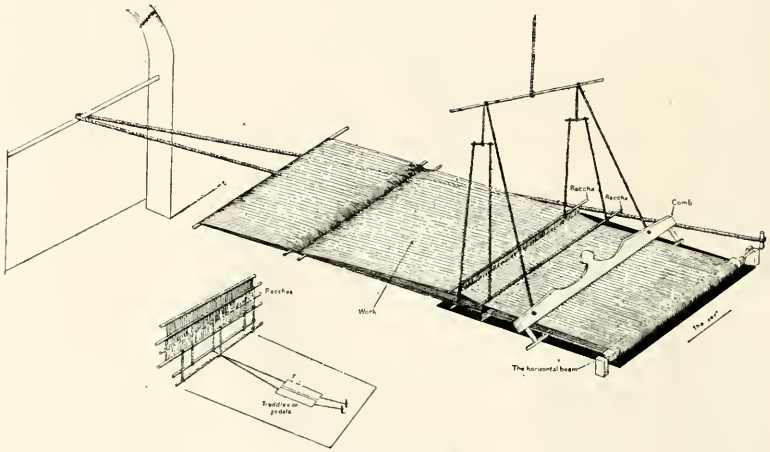
The spinning wheel is a very rude affair and consists of a small iron spindle with ends projecting beyond supporting bearings, which is given a rapid rotation by means of a band from a larger wheel that is turned by hand. The carded cotton is first formed into rolls between the hands. An end is twisted and attached to the spindle, the wheel is revolved and a thread as long as the arms reach is spun. This is wound up on the spindle and the process continued.

LAYING UP THE WARP.

One of the operations most likely to attract the attention of the traveler because it is performed in the open, is that of laying up the warp for the loom. For this purpose a number of pairs of upright sticks are arranged in a straight line equal to the length of the desired warp. Along this line travels a woman carrying two bobbins, the thread from which she runs upon opposite sides of the sticks. When she comes to the opening between a pair of close set sticks each thread is led to the opposite side and so continues until the next pair is reached. In this way numerous crosses or leases are formed, and by this means each run of thread is retained in a fixed and definite relation to every other, and the operation of threading the loom is made possible.

Nothing is more striking in a survey of textile work in India than the similarity of the native loom to the early European and Colonial hand looms. It would seem to be an instance of interchange of ideas or a case

of likeness of problem and conditions developing likeness of solution. In all cases we find some kind of a frame supporting two rollers upon one of which the unused warp is wound and upon the other the finished cloth. Between these hang two or more string heddles operated from underneath by treadles, which produce the shed, and in front of these swings the reed or comb by which the weft thread is driven home. These, with the addition of a simple temple to maintain the width of the cloth, constitute the



OUTDOOR LOOM.

mechanical elements of the Indian loom as they did of our Colonial loom and of the European hand-loom before the invention of the fly shuttle. It is true that in the outdoor Indian loom the warp beam is dispensed with and the far ends of the warp threads are attached to a rod held in position by a rope which turns around a stake and returns to a peg at the side of the weaver. By this means the warp is kept in tension and released as the cloth is wound up on the cloth beam.

Previous to 1700 a law was passed in England by which all wrought silks, mixed stuffs, and figured calicoes, the manufacture of Persia, China, or the East Indies, were forbidden to be worn or otherwise used in Great Britian. This law was designed for the protection of the Spitafield silk manufacturers, but Birdwood says, proved of little or no avail against the prodigious importation and tempting cheapness of Indian piece goods at that time. The conditions are now exactly reversed and Indian silk weaving is rapidly becoming a thing of the past in the face of the machine-made products of Europe.

Silk still continues to be woven throughout India, however, for ceremonial uses and for fine garments particularly where a colored pattern is desired on the ends or borders of the cloth. Colored silk borders are also woven by native looms on the edges of cotton cloth to be used for garments, and gold thread or "kincob" weaving is still practiced.

Woolen fabrics are woven in only the northern provinces of India, where they take the form mainly of carpets or blankets. An interesting fact in connection with this very limited industry is that in the northern

BLANKET LOOM OF NORTHERN BENGAL.

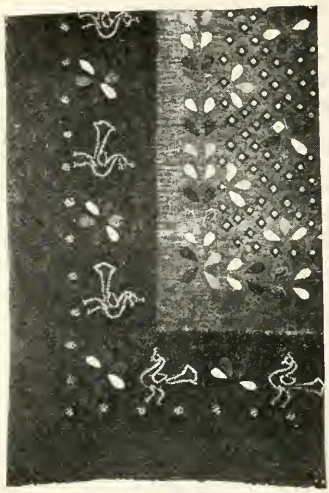
hill country of Bengal a very simple loom for weaving blankets is employed, in which a single string heddle, practically identical to that used in the Navajo Indian loom, is to be found. This heddle is operated in conjunction with a flat stick to form the shed in precisely the same manner as is done in making a Navajo blanket.

Perhaps no feature of Indian industrial life catches the attention or delights the eye of the traveler as much as the ever-present many-hued lengths of cloth fresh from the dye-pot that are to be seen about the streets of every town or village, waving in the air or hanging on poles in front of the house of the dyer.

The colors in native garments are endless. Almost every locality seems to have its favorite color, besides which the different religious seasons and ceremonies each demands its distinctive hue. This last fact

accounts partly for the universal survival of the native dyer, who in spite of his crude methods is still to be found in every village. The poor people have but few garments and these must needs go to the dye-pot when a change of color is demanded.

The use of vegetable dyes has pretty well disappeared in India, and the superior cheapness and ease of manipulation of aniline dyes have caused their almost universal adoption throughout the country. In every town of any size may be found a booth in the bazaar filled with the little tin cans from Germany or France, but one must search for a long time before finding any evidences of vegetable coloring matter.



TIED AND "RESIST" DYEING.

Much has been said and written concerning the utter vileness of the modern aniline dyes and the beauty and permanence of the old vegetable dyes. As a matter of fact, the comparison does not seem to be justified. Most of the common native dyes do not give permanent colors, but, on the contrary, are quite fleeting. The fact about the aniline colors seems to be that there are both good and bad, and those adopted by the native dyers are generally of the cheapest variety. Not only is this true, but it is generally the crudest and most glaring colors that are selected, and the effects gained with these naturally compare unfavorably with those gained from the softer vegetable dyes.

The old native dyes were obtained from fruits, flowers, leaves, roots, seeds, bark, wood and galls of plants and trees. Among the most com mon were: indigo; turmeric, the dried root of a plant (yellow); lac, the incrustation of the lac insect on the branches of a tree yielding a brilliant crimson; al, from the roots of a small tree (red); safflower, dried flowers (yellow and red); myrobalan, a fruit (gray); crushed tamarinds (yellow), and vegetable madder. Among these the most permanent colors are the blues and reds obtained from indigo, al and lac. Alum is commonly used as a mordaunt, either mixed with the dye stuff or in a separate bath.

Some of the methods employed to give a colored pattern to fabrics are extremely novel to our western minds and exceedingly interesting.

One of these is the spot decoration obtained by tied dying. For this operation the damp cloth is first pressed upon a block from the surface of which project nails or pins arranged according to the desired design. When the cloth is removed, small projections corresponding to the nail points are left on the surface. Each one of these is seized between the fingers of the worker, generally a girl, and dexterously bound with cotton thread. As these points sometimes are as numerous as two thousand to the square foot, and are often spread over the entire length of a five-yard sari, the amount of labor involved is something almost incredible. The speed and deftness of the woman workers, on the other hand, is marvelous; but even with the greatest facility two or three months are sometimes required to prepare the more elaborate pieces.

BAND DYEING.

When the entire design has been tied into little cones the cloth is turned over to the dyer and dipped into the dye-pot. It is then dried and the protecting thread untied, leaving white spots on a background of color. This is the simplest possible effect and one not usually produced. Ordinarily the cloth is dyed a light color before any tying is done. It is then tied and dipped into another color, and very often before the threads are removed another set of points is tied and a third color applied. This will result in spots of two colors on a background of a third. This may be carried to any extent. Another refinement of the process is to add more threads to the base of the tied cone after the first dipping and then dye with a different color. In this way spots of concentric color rings are produced.

It should be noted that the cloth is generally pinched in such a fashion that square spots are developed rather than round ones. A modification of this process is used to secure straight and waved line or band effects. For this purpose the cloth is folded several times lengthwise, or diagonally, and after being rolled into a rope is tied round about at intervals and dyed. The effect of this treatment is to produce a series of

bands running across the cloth. To this first set, by varying the manner of folding, may be added others running at a different angle.

Another peculiar method of surface ornamentation is that of painting a design upon the fabric by hot wax, then dipping in the dye-pot, and afterwards washing in hot water to remove the resisting medium. For this operation a brush, consisting of a bundle of soft steel wires fastened at the end of a slim handle is used. The fabric, which has been previously mordaunted and perhaps dyed a pale color, is stretched across a table and the design painted on in melted wax or "resist." This sinks into the fabric and goes quite through to the other side. After the piece has been dyed some deeper color than that first used, the wax is removed and the design is left on both sides of the fabric in a lighter tone. The process may be extended beyond this point to produce a number of colors.

BLOCK PRINTER.

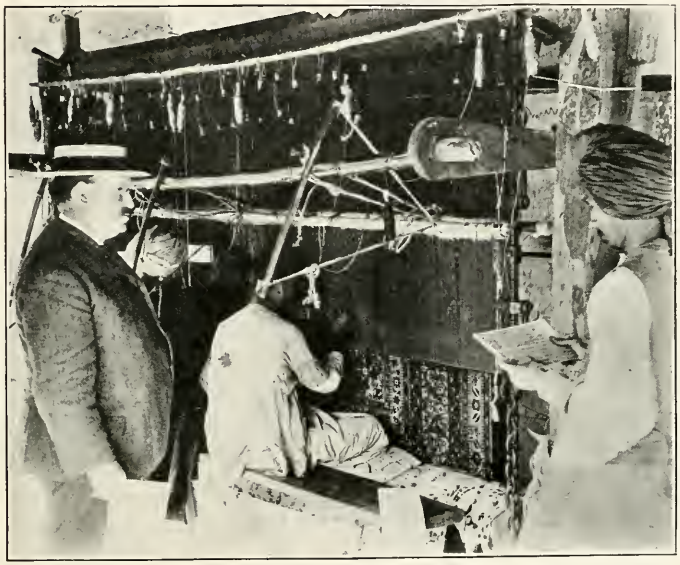
Block printing is one of the oldest and commonest forms of fabric ornamentation. Such blocks, generally covering but one unit of the pattern, are cut out of soft wood with the design in relief. A line block is very often used at first to print the outline in black. Then, if a number of colors are represented in the design, successive blocks are used to fill in the various portions of the pattern. Resin or gum is used with the desired color and mordaunt to form the printing paste.

India is not notable as a rug-making country, and yet many rugs are made there. Opinion seems to favor

BLOCK PRINTED CLOTH.

the idea that the pile rug was invented by the pastoral people of the cool, dry regions of Central Asia, and brought to India by the Mohammedan invaders.

The making of such rugs is today mainly confined to the northern provinces, particularly to the Punjab, where wool is readily obtainable and is very largely a matter of foreign trade. Almost all of these rugs

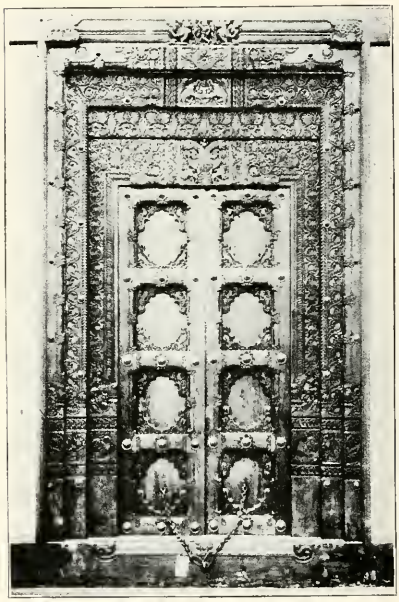


RUG LOOM.

(Permission of Smead & Lawton, New York)

are of large size and might properly be called carpets, and are made for the European and American markets on designs supplied from these sources. The rugs are made upon a massive vertical loom which holds the warp of cotton thread. In front of the loom squat a number of boys, each one of whom operates on a given space, about two feet wide, marked off by a red warp thread. With a deftness that is remarkable these boys run the ends of various colored yarns hanging from bobbins into the warp, pass it with one hand around two threads in the peculiar rug "tie," and then, in what seems the same movement, snip off the ends with the curved knife held in the other. When one horizotal line of ties is completed a weft thread is run with the shuttle and the shed changed.

The method of giving the pattern to the weavers is somewhat peculiar. First a full-size drawing is made of perhaps one-quarter of the rug with the position of warp threads indicated and the outline of the design shown. On this the head designer fills in letters indicating the various colors. The drawing is then divided up into spaces representing a day's work for each workman, and is turned over to a writer who transcribes each of these units into what is called a talim sheet. In this the position and color of the threads is denoted by a sort of shorthand code, which for fear the design may be stolen is known only to the workers of the particular establishment. These sheets are pinned directly in front of the boys as they work at the loom. The boys are very often little fellows, the smallest of them being only six or seven years old, and are paid from 2 to 8 annas (4 to 16 cents) a day.



HINDOO CARVED DOOR.

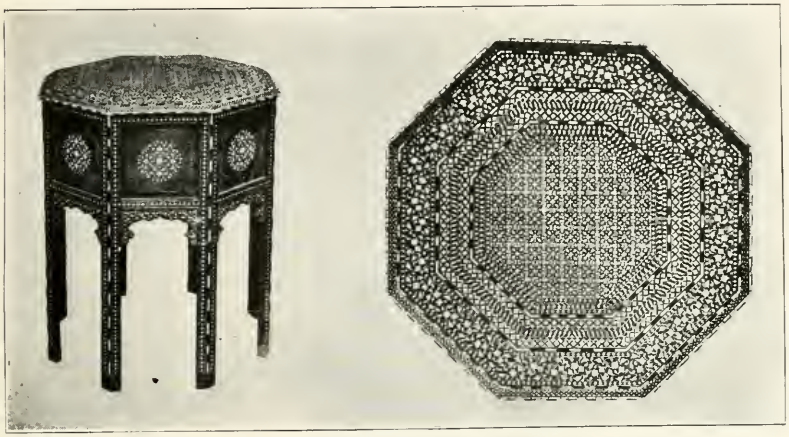
For the finer rugs the wool of the Cashmere goat is employed; for a less expensive quality sheep's wool is used.

Turning to woodwork we find in India little of direct suggestiveness for our western needs. In our point of view accuracy of workmanship is a prime essential when pieces are to be fitted or joined together, and accuracy is not a strong feature of Indian craftmanship. On the other hand, with the exception of a bedstead and the Mohammedan taboret, furniture is scarcely to be found in Indian domestic life, so that little of truly native design in wood is to be studied outside of architectural work.

Woodcarving is one of the arts to which the genius of the Indian craftsman most readily lends itself, and throughout the country are to be found exquisite examples of doors, windows and balconies decorated in low relief and exhibiting an almost endless variety of ornament. It is emphatically in such building decoration that carving reaches its highest excellence. In smaller constructions, most of which have developed in

response to the foreign demand, the tendency is toward over-ornamentation, coarseness of design and crudeness of finish.

This same tendency to over-elaboration may well be charged against Indian architectural work, but here the main structural members are so well emphasized and the principal masses so well disposed that the profuseness of ornamentation serves merely to give an effect of pleasing richness to the whole.

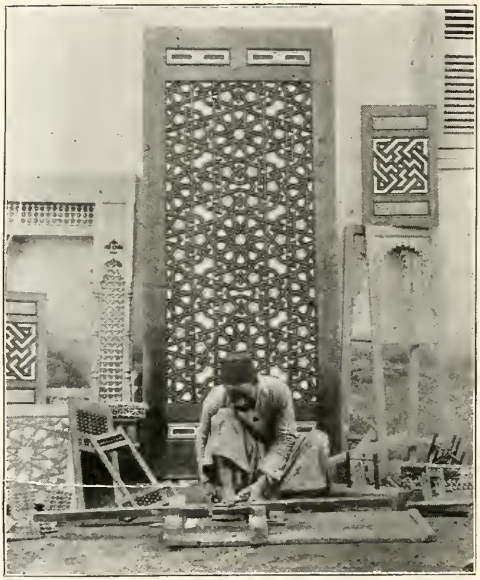


TABORET INLAID WITH IVORY.

No feature illustrates this as well as the door. A carved door is a mark of position and wealth on the part of the owner, and Hindu, Sikh and Mohammedan have lavished a wealth of art and labor on these structures that is as astonishing as it is delighiful. In such carving may be found most of the motives that appear in Indian decorative art and a very thorough knowledge of the character of native design might well be gained solely through a study of doors and their enclosing frames.

Perhaps the most pleasing of all are those of Mohammedan design with bold conventionalized ornament often arranged in diaper or interlacing patterns. But doors of pure Hindu design are often very fine and dignified. In these constructions the tendency of indigenous art towards the symbolic and the grotesque is restrained by the limitations of structural lines and flatness of surface, and in this way a combined effect of richness and subordination is secured that is rare indeed in Hindu work.

Many of the minor articles of wood construction such as taborets or boxes are decorated by inlays or incrustations of shell, ivory, bone or wood, held in place by glue or gum, and like all such work subject to rapid deterioration through time and use. Some of the inlaying of ivory on a wood surface is quiet and pleasing, but where applique or marquetry is used complexity and over-elaboration seem inevitable. The so-called Bombay boxes, which are covered with many colored marquetry in intricate geometrical designs, are particularly distressing examples of this fragile and overwrought art.



TURNING LATHE.

To our eyes one of the most primitive mechanical devices of the Indian craftsman is his turning lathe. This consists of two short pointed iron rods set in wooden blocks, one of which is fixed and the other movable on a piece of wood that serves as a bed-plate. The piece of wood to be turned is mounted between the two iron points and around it is carried the cord of a bow. This bow, operated by the right hand of the turner, serves to impart a back-and-forth rotation to the piece, which is then formed by a chisel held by the left hand and by the toes of the left foot. This use of the foot is so prominent in many branches of work that one sometimes feels a doubt as to the entire propriety of the term "handicraft" as applied to Indian industries. This form of lathe is identical with the Turkish lathe found in Cairo, where it is largely used for turning the small pieces that make up the elaborate grills of the Egyptian balconies.

The various saws for wood are apt to be among the most interesting and significent tools of a people. In India a peculiar curved saw operated by two men is used for cutting through logs and large beams. The saw is operated on the pull stroke (as are all Oriental saws), and its shape

CURVED SAW.

WHIP SAW.

does away with the necessity of raising the log above the ground as in the case of the straight blade.

For cutting boards from the log a uniform type of saw seems to be used throughout Asia. The blade is held in a frame in the same manner as our whipsaw and is operated by two men in a fashion similar to that of the old pit saw, except that in the east the pit is not used and the log is supported in an inclined position with one end on the ground. One sawyer stands on the upper face of the log and the other on the ground underneath. In Japan precisely the same method of supporting the log is practiced, but there the short, peculiarly shaped Japanese saw operated by one man is used.

Pottery plays a very important part in the domestic life of India, but it is almost entirely of the unglazed and, to a large extent, undecorated type. In the Hindu point of view earthen vessels that have been touched with food are defiled and can be purified only by rebaking them in the fire. For this reason such vessels are used for cooking or serving food only by Mohammedans, but for keeping and cooling water, for the storage of grain, flour and spices and for the pots of the dyer their use is universal. For these purposes a glaze is not necessary, and for water jars it is precisely the porosity of unglazed clay that is essential, inasmuch as the cooling effect is gained by the steady evaporation of water which oozes through to the outer surface. It is because of these facts that glazed pottery plays so small a part in the domestic uses of the people, and when found seems almost an exotic amid the great mass of crude yet vigorous pottery in common use.

The village potter is a part of the communal scheme of government. His office is hereditary. He supplies jars and pans to the entire village community and is paid by fees at an established rate from the common funds. His clay is obtained from the immediate vicinity and is commonly of the red variety. This is dried and then pounded and sifted. It is then soaked in water and kneaded to a stiff paste. During this process sand is added to increase the porosity and to prevent cracking during the drying and firing.

The common wheel is of the simplest character. It consists of a disk of clay, with perhaps a slab of baked earthenware on the center of the top, and a piece of stone on the under side. A conical hole in this stone engages the point of an iron pin that is driven into a block in the ground. Near the circumference on the upper face are several notches or holes inclining towards the center. Into one of these the potter catches the end of a stick held by both hands and gives the wheel a rapid twirling mo-

tion. During the rotation so gained, which lasts for a surprisingly long time, he shapes the mass of clay resting on the center. When the wheel shows signs of slackening it is given another twist.

Small vessels are shaped entirely on the wheel, but the large water jars and other shapes are only roughly formed in this way. They are thrown much thicker and smaller than the desired shape, and then taken

FINISHING A POT.

from the wheel, and when partly dried, are beaten into their final form. For this purpose a curved piece of baked clay or stone fitted with a handle is held inside the vessel by the left hand, and the clay over this is tapped by a flat mallet of wood. For an ordinary water jar this operation requires a number of treatments. When the clay has become too dry to work water is applied, the piece partly dried and the beating continued.

The kiln used for firing this kind of pottery is simply a hole dug in the ground near the potter's house. In this are placed alternate layers of fuel (generally buffalo dung) and dried pottery, with two or three bottomless pots in the center to serve as a chimney. The fire is started at the bottom, and the top covered over with sweepings, straw and dirt. The heat is regulated by opening or closing holes in this top covering, and the firing lasts from one to three days according to the size of the kiln. The loss involved with such rude methods is naturally very great, running it is said from 25 to 40 per cent of the charge.

The common unglazed pottery made in this fashion is often decorated by simple methods. Sometimes bands of lines are scored on the piece while it is on the wheel, or again when the clay is partly dry, patterns are scratched with a nail. Designs are also impressed on the moist surface with wooden stamps; but the method most frequently employed is that of painting the surface of the unbaked vessel with chalk and various ochres or earths. (See cut on page 66, January number.) When the piece is baked, these colors unite to some extent with the clay surface and form a fairly permanent color effect. This method of decoration seems to be the same as that pursued by the American Indians of the southwest in coloring their bowls and jars, and the appearance of the two kinds of pottery is in general very similar. The motives employed in the East Indian ornament are less crude and more conventionalized, but the color effect is much the same.

Another very interesting correspondence with primitive American methods is found in the means employed to give a black color to unglazed pottery. This is done by smearing the vessel with some oily or resinous substance, and after the firing process is under way, sealing the kiln. As a result the smoke from the straw and dung fuel deposits carbon on the oiled surface, and a thin but lasting black coloration is obtained. It is said that a similar result is secured in the Himalayan districts by throwing pine bark into the kiln when the charge is half baked and closing down the outlets. This seems to be precisely the same thing that is done by the Cherokee Indians of the Southern Atlantic States, who burn oak bark in a closed vessel with their small pieces of pottery.

Glazed pottery seems to have first appeared in India as colored tiles for the mosques, and from these to have extended to the production of a small amount of ware for Mohammedan use. Such ware is produced in a very few towns and is rarely to be seen outside of these places. The making of ornamental pottery, however, has been fostered of late years by the government art schools, and most of that which is seen by the travelers comes from this source.

The decoration on the purely native product, which is confined to the northern Mohammedan provinces, consists of large floral units, always thoroughly conventionalized and well subordinated to the shape of the vessel. Almost universally a white background is employed with, at the most, two or three colors or shades of the same color. These colors are commonly the same as those in the old Persian tiles, dark blue and turquoise. The dark blue color is obtained from cobalt, and the turquoies from oxide of copper.

These notes upon the handicrafts of India are necessarily brief and, of course, exceedingly incomplete. It is questionable whether many of the operations touched upon are capable of direct application to school use, but the writer's purpose will have been gained if this limited survey serves in any sense to make clearer the nature of some of the processes that have formed the genesis of our present industrial methods, and in this way develops a truer perspective as to their relative values and perhaps a suggestion as to their sequential treatment in school work.

GLAZED JAR FROM THE PUNJAB.

CORD AND RAFFIA WORK.

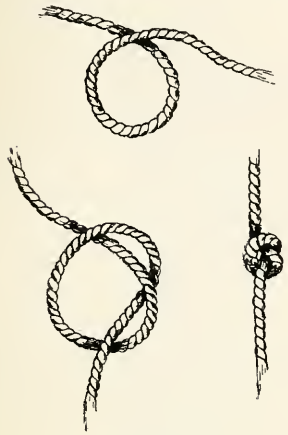
ANNIE L. JESSUP,
Director of Constructive Work and Sewing, New York City.

THE use of cord and raffia as a medium of self-expression in classes of young children has been most successful in its results. These materials are easy for a child to manipulate and well adapted for the work required — the work which is most valuable in connecting the hand training of the kindergarten with the sewing and carpentry in the advanced grades. Dr. Seguin says: "The working capacities to be trained from infancy are, first, the senses to perceive; second, the mind to receive, store and evoke ideals; third, the hand to execute a concept." As the young child's power of perception and reasoning is very crude, it follows that the development of creative activity should be along lines represented by a tendency to reproduce his actual environment. In the early life of the colonies even the little children had their share in the activities of the household. The performance of these duties developed resourceful, independent characters. In the artificial environment of city life there is little or no opportunity for the development of a child's creative ability. The small, crowded homes, where even the mother has little or no knowledge of the industries connected with the home life, are not conducive to the development of children along the lines of handwork. The possibility of "learning to do by doing," or, as the Comenian maxin has been amended by Dr. Dewey, "learning to know by doing," has small opportunity of being practiced.

The use of the large cable or seine cord does not require minute muscular adjustment and gives opportunity for considerable motor activity. Each finger of both hands is brought into use as well as the muscles of the arm. The color sense is developed, preventing the possibility of color blindness. This opportunity for color study is especially valuable for boys whose opportunity of developing a correct color perception is more limited than that of girls. Examinations have shown that a much larger proportion of men than women have incorrect color perception; and it has been concluded that this is probably largely due to

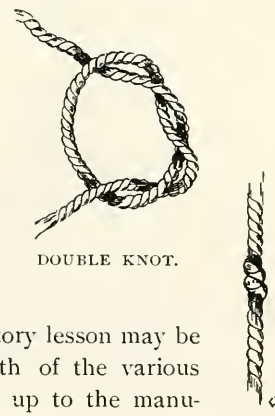
the fact that the color sense in girls is trained and exercised in their knowledge of fabrics and materials used in household industries.

For the best results to be obtained from manual training, it is most desirable that the subject should not be taught as an isolated one, and it is unfortunate that it is often looked upon as entirely separated from other subjects in the curriculum. There are many possibilities of correlation in the teaching of cord and raffia work. The child has formed a clear concept of the exercise to be made by the attention he has given to the direction of his teacher, thus developing concentration of mind. Having this mental image, his hands proceed to obey the will of his brain.

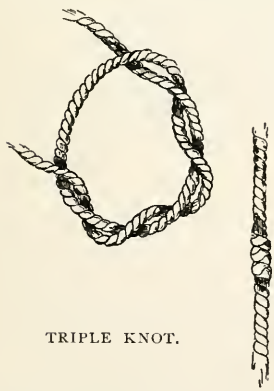


SINGLE KNOT.

Arithmetic in the lower grades is generally objective. The child counts the knots he has made—two single, then five double; then again changing, forming his own combination, thus showing his invention and also adding to his knowledge of numbers. The spacing of these knots in a chain is a practical application of the instruction on the use of the inch measurement. A reading lesson containing the terms used in the exercises and the names of the materials appeals directly to the child's interest. A natural history lesson may be given on the growth of the various fibres used leading up to the manufacture of the various materials. The development of the muscles in the hands and arms is certainly a part of physical culture.



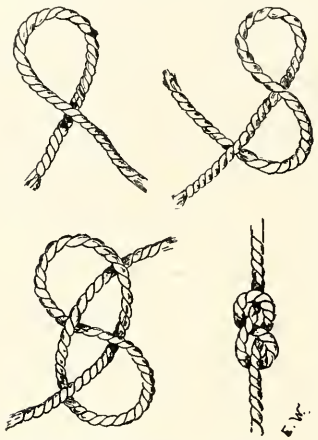
DOUBLE KNOT.



TRIPLE KNOT.

Beginning with the single knotting in the first year of the elementary school, the illustration shows the movement of the hand in making the knot. In teaching a large class of young children, it is necessary that the instruction should be given at first in a somewhat formal manner, the children following with their

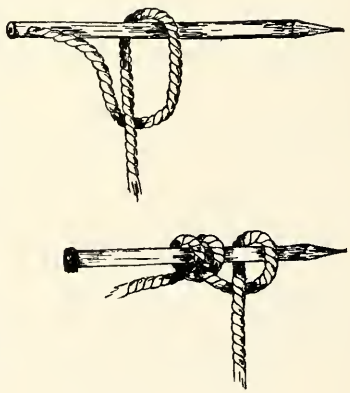
eyes as the teacher carefully demonstrates step by step. Their mental conception is thus aided by their power of imitation. When the proper method of making the knot or stitch is once acquired, then the opportunity for freedom of expression is possible, combining accuracy and skill in manipulation with invention.



SINGLE FIGURE EIGHT.

The first-year work may include knotting and looping with both cord and raffia. The latter exercise is taught by making a loop-knot or stitch over a pencil. The number of articles that it is possible for the children to make after they have acquired some facility in the exercises is innumerable. Chains, portiers for dolls' houses, bags of many kinds, napkin rings and picture frames are only a few of the possible creations. It is an interesting sight to visit a classroom and see sometimes sixty busy little workers so intently occupied that they are oblivious to a visitor's presence. The pleasure shown by each child in his own handiwork is a strong argument for the value of the subject.

The fact that the article may be planned and constructed with a view of making a gift for some one at home has an influence on the child's character, and he thus learns early the pleasure of doing for others. Do we not all remember the importance we felt when, as little children, we were keeping the secret of some intended Christmas gift? This pleasure is certainly enhanced when the article is of the child's own making. Many a happy little worker in the weeks before Christmas plans and makes presents for those at home.



SINGLE LOOP STITCH.

The influence of home environment is easily traced in the nature of the articles which a child chooses to reproduce. The other day I was shown a small tray-shaped basket made from braided raffia which the teacher told me had been made by a boy to represent a collection basket. It was quite evident that this child had been in a country church. This

is only one instance of many coming under my observation showing the child's reproduction of his actual environment.

The knotting and looping lead up to weaving and basketry, the raffia work of the first year developing into the making of real Indian baskets of various stitches made with raffia over either heavy cord or reed. The reed basketry, while most interesting, especially for the boys, is a some-

FIRST-YEAR WORK.

what difficult problem in large public school classes. The material must be kept damp enough to be pliable, so it is better to make mats and baskets of a size that can be finished in one lesson, thus avoiding the necessity of again soaking the half finished piece of work.

The cord work leading up to the reed basketry gives to the children a sequence in the gradual increase in the resistance of the material. The large, coarse knots and big stitches are an excellent preparation for

sewing for the girls. The dreaded button-hole stitch has been learned without a struggle by the little child making her raffia frame in the first year.

Will not this spirit of industry and the habit of carrying thought into execution be an important factor in the development of these boys and girls into men and women of strong, resourceful characters?

SECOND-YEAR WORK

A NEIGHBORHOOD SHOP FOR CHILDREN.

CAROLINE L. PRATT,
Hartley House, New York City.

LL settlement workers believe that the pleasures which they offer the neighborhood people are meeting a most urgent need. The moral, mental and physical well-being of our large cities demands that better pleasures be provided the people. No matter with what avowed purpose a new settlement is started, it finds that it can do little in other directions until it supplies, more or less, this urgent demand. But at the same time settlement workers know that sociability and recreation are but a means to an end; that better work is, after all, the final thing. They realize that the environment is at fault, and they try to lead to better things by modifying this somewhat.

A single circumstance has made it possible for settlement workers to know and understand the needs of the people, and especially of children. That circumstance is that there is no compulsion in operation in connection with their scheme of education. To work at all, they are obliged to know what is wanted. This is not true of the institutions of public instruction. These formulate courses of study, and it is a mere chance if they suit the needs of any considerable number of children.

Thoroughly realizing the necessity for play and at the same time the value of work, it has been the primary object in the particular plan of teaching shopwork to be described here to reduce the work to a minimum in the beginning, in order to give the freest possible scope to the play instinct. I say the "freest possible scope," because it is not possible to reduce shop-work to play pure and simple. There is always a coming back to the same old thing, a persistent mental effort which belongs to work alone.

If shop-work presupposes a certain amount of will power in a child, and can appeal only to children who have this; still it is possible to arrange the work so that a minimum of will power is necessary and to adjust it constantly to suit a growing power. To this end, a low standard of work is permitted in the beginning, and whether the model is a good or a poor one, the child has it when it is finished, thus is used that instinct for ownership which in other forms of school work is shown in collections of various kinds. In an article on "The Psychology of Own-

ership" in the Pedagogical Seminary for December, 1889, the author says: "The desire to own is one of the strongest passions of child life." Further, "As in labor, ownership was conceived, so in labor its real sweets are to be found."

A paragraph in this article throws much light upon the subject of manual training and this instinct for ownership:

"Here lies the true value of manual training in our schools: That the child may learn how much more valuable is the article which he had made with his own hands with his own labor. It gives a knowledge from whence the sweetness of possession derives its source. The technique is of practical use, the learning how is valuable, but much more valuable is it for the child to learn the divinity of labor. No one who has worked with hammer and saw, and learned how rich in pleasure is the possession of an article derived from hard labor, can consider work a degradation. It puts the child in sympathy with labor and the laborer. Looked at from this point of view, no one factor has greater possibilities of developing the child than that of manual training. It puts the child in sympathy with men. He rubs in large grains of the stuff we call humanity, and for this reason it is essential that the child should be allowed to make things he wants, and also that the things made should belong to him."

I have spoken of the child's instinctive love of ownership as a means which is used in shopwork to get him to exert his will and intellect. When he is a mere baby he is content with anything which is given him. But gradually these things which are his by right, and which he can have, become undesirable. He wants new things. He hasn't learned to play with toys, and what he gets loses its value as soon as the instinct for ownership is satisfied. But bye and bye he learns to use the things which he owns, and then their value begins to be felt. Then he wishes to own things for what they can bring him in the way of pleasure. It is at this point that shopwork will begin to appeal to a boy, or to a girl either for that matter, if properly presented. Together with the desire to possess comes the desire to possess things which can be used. This is the teacher's opportunity, and the question is, how shall she use it? The sloyd people say, "Give the children a course of useful models," but the teacher, not knowing minutely the minds of these little individuals, has no way of judging what would be useful to them. They are more individual than we as adults are, for they haven't been put through the leveling process which most of us have; and the things they want they want intensely, and the things they do not want they cannot often be persuaded into working for. It seemed there was no logical way out of the

difficulty but to allow the children to decide for themselves what they should make, and this plan has been adopted.

Another instinct of which we take advantage is that for physical activity. The children are allowed to make large things if they wish to. I have a frail little girl of eight in a private school where the same method is operative, who has made a sled for her own use this winter.

These two motives, love of possession and love of physical activity, are the two we employ to get the children to want shopwork. Many children come for the work who think they want it and do want it for a brief time. If we succeed in carrying a child past the point where the tools are a novelty to him, where he comes merely for the pleasure of feeling ownership in them for a brief hour, to the point where he wants the work for itself, we have one with whom it is worth while to spend much time and energy.

That our methods of teaching manual training should have followed the methods of teaching other forms of school work is but natural. Perhaps it ought not to occasion surprise that we have gone to extremes and have over-systematized our handwork. Its very nature invites this. But a reaction is surely setting in. The man who would throw a boy into the water, that he may learn to swim, would also put a boy in a shop and let him learn to construct. As in the first case, he would stand by and see that the boy did not drown; so in the second he would stand by and see that he did not destroy, and he would offer suggestions.

Those who come in contact with street boys to any extent—with boys who earn a living by selling papers and blacking shoes, and similar street occupations—are impressed with the fact that these boys have something which the ordinary school boy has not. The street boy has objectionable vices, but he cannot be called mediocre; he is an individual to be reckoned with. He has initiative. He thinks quickly, and he does not wait for anyone else to tell him how to act. In the end his vices will probably swallow up his virtues, and for this reason we do not leave our children to the street. As we study these children, however, I think we find that there is something in their training which we would do well to carry into our schools. This opportunity of the street is initiative—a thing a boy needs and under which he progresses most rapidly.

Such a plan of shopwork as I am endeavoring to describe includes this opportunity in initiative. The children not only choose a model, but they choose style and size. Then fitting together is actually planned. There are no ready-made drawings given out. I do not mean to say that all of the children actually plan all of their work; they are only advanc-

ing toward this desirable end, and they have to be helped over many rough places. I insist always that I be shown a drawing, or that the model be described and that the dimensions of each piece be written down on a piece of paper and kept for reference. More often than not, I help a boy to decide upon dimensions, always hoping that he will be able to do more of it on the next piece.

The following is not an unusual case, I fear: The other day I asked a young girl of about fifteen, who is taking shopwork in a large school, what she was making. She replied, "A box; and," she added, "I have to make it over." "Why?" I asked. "Because it is too small." I then asked what the box was to be used for, and she said that it was only a box, not one for any especial purpose. I asked, "How can it be too small then?" The answer was what I expected: "It is smaller than the drawing called for."

To teach a child to do a thing because the drawing says so is like teaching him to think thus-and-so because the book says so. If it is necessary that he should have a better reason than authority for thinking a certain thing, why should it not be required of him that he have a better reason than authority for acting a certain way?

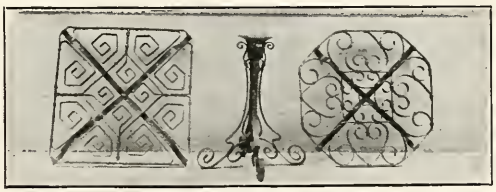
To the question of accuracy, I would answer that there are always duplicate dimensions in a model made of several pieces, and these dimensions must be the same or the whole cannot be put together. Further, that there comes a time, sooner or later, in every boy's shop experience when the purpose is so definite that the model must be definite also. The boy who makes the music cabinet must not get the whole too small to contain the sheets of music. There are so many natural opportunities for training in accuracy that I cannot explain to my own satisfaction why we have always insisted on having a model the size originally called for, if there is no clear reason for this. I should not wish to stand for training a child to change his mind to suit his convenience, but if his convenience coincided with a real, honest reason for changing his mind, he should be taught that honesty demands that he change it and act accordingly.

Not all of the boys who come to the shop have recognized wants which can be filled there. This is considered the worst calamity of all. Their grandfathers would not have been considered boys at all if they had not had wants which could be supplied by a knife and a piece of wood. So we are often obliged to go to the bottom of things and create wants. This is done by means of pictures and models, and by suggesting a variety of things, and by sending the children to the different members of the family to talk over family wants.

The value of making the work purposeful *from the child's standpoint* cannot be over-stated. I would even go so far as to say that a poorly-made sled taken to the country and actually used for the variety of purposes for which a sled is useful, would be of far greater value to a child educationally than a large number of set models kept until the end of the term and then exhibited. It is in this very direction that the opportunity of the manual-training teacher lies.

I once showed a small public-school girl of perhaps ten years a number of pieces of dolls' furniture, and asked her if she would care to make some of them. She was visibly excited at the thought; but when I asked her what she would do with them when they were made, she evidently threw herself into her usual mental attitude towards school work in general, and said, "I should like to put them in the big exhibition case upstairs."

I believe that the desire for a certain amount of show is natural to every child; but when a child prefers to give up all claim to such things as toys which she herself has made, I believe some abnormal influence has been acting upon her. The exhibition case is a most artificial purpose for school work. Only give the children a chance and they will teach us better purposes than this. We can trust them, for as they are nearer to nature, so are they truer to nature. We theorize; the children feel. Our very theories blunt our feelings. We are never sure of them. But in a little child we have something which is all feeling—pure, primitive, direct. Why not use his feelings to test our theories by, especially in those things which concern himself? At any rate, we have nothing better to go by. If the whole plan of nature is purposeful, then each child is here for a purpose. The germ of the purpose is in the child. How shall we ever find this out and be able to give him that help which ought to be ours to give—wisdom—if we always dictate to him instead of allowing him to talk to us?



METHODS OF WOOD-FINISHING[1]

E. H. Sheldon.

E are indebted to Mr. Van Deusen for his practical, scholarly, tabulated receipts on wood-finishing. If all or even half of his "good," "fair" and blank colors, with their various intensities will "pan out" with our boys in their final struggle with the table or stool over which they have worked many hours, then his name will be handed down by them to posterity and their children will rise up and call him blessed.

There is no phase of our work, in my opinion, so delightful to pupil or instrustor as that of developing the beauties of materials by the finishing process; and on the other hand, is there anything more disappointing than an expanse of smears and streaks covering the hours and hours of painstaking construction work, for which in all probability their mothers have already cleared a vacant place in the parlor. Those of you who have adopted the furniture method of finishing off your pupils are familiar with these tragedies. The "forty-niners" of this association who have gone through the four-coats-and-rubbing-down process, can appreciate Mr. Van Deusen's little can of brown stain and his wax pot.

At the Chicago Manual Training School we used to devote seventy-five hours to cabinet work. Finishing by the old process, I used to consider twenty hours necessary for a pupil to finish his piece successfully. This process also involved about forty per cent of the total cost of his piece. Our aim was shine not harmony. Next to the paymaster the greatest benefactor of the manual-training teacher is the individual who invented flat finishes and straight lines in construction, these styles fit so well the ability, experience and comprehension of the beginner.

As Mr. Van Deusen suggests, practical information on wood-finishing that meets the requirements of the manual-training shop is scarce. The materials and processes must be such that the inexperienced pupil will not spoil the results of a season's work, yet his ambition and pride prompts a finishing no less artistic than that of a professional.

[1] This paper was presented to the Illinois Manual Arts Association, Peoria, Feb. 18, 1905, in discussing the paper by C. S. Van Deusen, which was printed in the January issue of the Manual Training Magazine.

I am reminded here of an acquaintance of mine who had been appointed to a position as manual-training teacher and wished to post himself, during the vacation, more thoroughly on wood-finishing. He therefore offered his services free to a large furniture manufacturing concern known to be much in sympathy with manual training. He was assured he would always be welcome in the shop to absorb what he could, but they would not trust any of their work to him. They knew too well the disasters that accompany the inexperienced in their efforts in this line. Experience, I believe, is about the only reliable guide in wood-finishing.

The pupil, the material to be finished, and the drying conditions, must be considered often before the method. For example, my experience with acetate of iron, which Mr. Van Deusen credits with a goodly proportion of "fair" and "goods," was always very satisfactory on single sample pieces, but the boys got quite unsatisfactory results with it because of the widely different action of the stain on different pieces in their construction. It often barely changed the color of a second-growth piece of oak, while it turned the parts from the old stock very dark. The tannic acid in oak makes the stains relying on this quality uncertain.

Last year at Evanston with our oak pieces we adopted the plan of selecting the color desired regardless of material or ability of the finisher. If our acetate of iron was unsuccessful we followed it up with a coat of Brenig's weathered oak—an oil stain pleasing in color and one with which the boys were uniformly successful. As a last resort we had a cure-all in a black flemish wood enamel that would cover the sins of Sodom. It could be poured on and spread around with a stick and yet dry out beautifully smooth and rich in appearance. But as Mr. Van Deusen suggests, it was on the wood, not in it.

My experience with water stains has been somewhat unsatisfactory on account of their tendency to fade. They usually consist of a can of water and a little aniline dye, notwithstanding the label and the price. I went through a season of it four years ago when I was sure I had solved the finish problem. Mrs. Sheldon now has a table made and finished at that time and she has to move the centerpiece on the top daily to keep it all fading at the same rate.

Water stains also necessitate more or less sand-papering after they have been applied, to smooth down the grain which raises under its action. In this process a beginner is liable to cut through and streak the surface, though the tendency of the grain to raise under the influence of a water stain can be offset considerably by adding glycerine.

For a dark flemish oak finish we found we got very satisfactory results by using the acetate of iron, first following this with a dark water stain before using the oil. This process does not raise the grain and gives a dark finish not of the dead black appearance of the logwood stains.

We made a practice of following all of our stain finishes with a very thin coat of shellac and a coat of wax. The shellac adds greatly to the permanency and tone of the finish. We were quite successful with the acetate of iron in finishing sycamore. This wood I have found very satisfactory in our work in all but the finishing process. It works easily, retains its shape, glues well, and finishes comparatively easy with shellac rubbed-down finish, but practically all of the stains I have used except the iron detract from its appearance. This, when rubbed down with linseed oil, gives a very rich brown finish.

Oil stains have these desirable features to recommend them to the manual-training teacher: They are slow-drying and are rubbed off; they can be blended, increased or decreased in intensity and, to a considerable extent, can be removed from hard woods; they do not raise the grain and can be made reasonably permanent with a coat of thin shellac. Oil stains have not been a success in the very dark finishes, especially for oak. The acid qualities in such a stain cannot be combined with an oil and be effective in darkening the silver streak of a quarter-sawed surface. This is very noticeable in using colored fillers. Any combination of colors desired can be obtained in the porous portions of the wood but the silver streak always comes up smiling as before.

I am glad to know the effect of heat on some of the finishes, but would have found its application difficult last year. Confront a man with twenty-four boys mixed in with a carload of furniture—the position common to many of our manual-training teachers now-a-days—and he has little time to think of that kind of heat; he is usually troubled with another kind. He has several kinds of finish going the rounds; one boy is thinning the shellac with turpentine, another is dipping his brush in the wrong can, while still another replenishes his supply of weathered oak from the bog oak can. The fumings under these circumstances are not along the lines suggested by Mr. Van Deusen.

Several years ago I adopted this plan for issuing my finishes. I asked my classes to bring in Baker's cocoa cans. We made wooden corks for these with holes in them through which we drove the brush handles. This did not interfere with the use of the brush, and insured the lid always being kept on the can. It also kept dirt and other brushes out.

We fitted our cans with various sized brushes ranging from one to two inches to adapt them to the various requirements. I have known shellac to remain fluid in these cans an entire vacation. When I see cone-top shellac cans going out at 25c each I am inclined to think the purchaser is being buncoed. We used open-neck bottles, such as small milk bottles for acid stains. This method of issuing finishes prevents evaporation and preserves their uniformity.

Notwithstanding the fact that high polish is becoming obsolete from the manual-training point of view, I do not think it should be overlooked entirely by an instructor. I have reduced it after considerable experimentation to three or four coats of shellac, rubbing between with water and pummice to a surface, and polishing with oil and pummice. I use wood alcohol shellac for economy. My experience is that with a turpentine varnish the drying time and conditions are much harder to meet than with shellac, though it is somewhat easier to apply. The defects in applying a turpentine varnish are much harder to remedy than those in shellac, and they are one of the certainties in this work.

I wish to say in this connection that it is an unfortunate mistake on the part of a teacher to impose on or permit a pupil to undertake a piece of work beyond his ability, and one which he cannot finish well, but in my opinion it is a much greater mistake to impose on him a task beneath his ability, for which he has no sympathy or respect. Give the average thirteen-year-old just a reasonably correct knowledge and independence with his tools and then let him make a man's chair. He will rise to the task like a man and develop wonderfully in that direction. Give him a file and a stick from which to make a paper-knife and he will lower himself to its requirements. If there is a question as to what he can or cannot do without spoiling it, give him the benefit of the doubt and he will win out nine times out of ten.

ASSOCIATIONS

THE ILLINOIS MANUAL ARTS ASSOCIATION.

Members and guests to the number of fifty assembled in Peoria to attend the second annual meeting of the Illinois Manual Arts Association at Bradley Polytechnic Institute, Friday and Saturday, February 17-18, 1905. Of special interest on the first day were the exhibits of Bradley Institute, arranged by the Peoria School Crafts Club under the direction of Fred D. Crawshaw, president, and Presson W. Thomson, chairman of committee on exhibits. Many of the visiting teachers also availed themselves of the opportunity to visit the manual training departments of two of the Peoria public schools, where the shops with their equipments and classes at work were thrown open to inspection. These were the Franklin school, where manual training is taught in all the grades, and the high school. There were also extensive exhibits by all branches of the Department of Manual Arts of Bradley Institute, as well as a number of choice pieces of work brought by visiting members. The opportunity to study these exhibits constituted a most valuable feature of the meeting, and not willingly does the writer dismiss the matter with but a passing mention.

At five o'clock on Friday afternoon the members and their guests began to assemble in the reception rooms of Bradley Institute, and a social time was indulged in till the hour for the banquet.

Shortly after six o'clock ushers led the way to the spacious dining room, where the dinner prepared and served by the young women of the Domestic Science Department was thoroughly enjoyed. The tables were arranged in the form of an "E" and lighted by the soft rays of over one hundred miniature electric lights placed within red tissue-paper tulips. A most delightful decorative scheme was completed by the use of smilax, potted plants, and banks of palms and ferns. The decorations were designed by E. V. Lawrence, Department of Manual Arts, Bradley Institute, who was assisted in their execution by the class in electrical construction under C. S. Van Deusen.

At the conclusion of the dinner the speakers of the evening were introduced by the president of the association, Charles A. Bennett. Mr. Bennett expressed the pleasure of the association occasioned by the presence of the ladies, of whom there were eleven.

Dr. T. C. Burgess, Director of Bradley Institute, was then introduced, and repeated the very cordial welcome extended to the association one year ago.

SUPERINTENDENT STABLETON'S ADDRESS.

The principal address of the evening was then delivered by Superintendent J. K. Stableton, of the public schools of Bloomington, Illinois, on "Some Problems I Have Met in Organizing Manual Training in Public Schools." He said in part:

"Right at the outset I want to say that I have been asked to tell about what we have been trying to do. I shall have to talk about the beginnings of things, then, for we have not yet gotten things into the shape we would like to see them.

"Four years ago there was no form of manual training in the Bloomington schools; but I became convinced that the introduction of this work was neccessary, and decided to try an entering wedge. I found that the board was not very sympathetic, but I would not let that deter me. I found one of the janitors who had a little spare time and who was willing to take hold of something with some of the boys. This janitor was a mechanic and had a kit of tools and a work bench. We found twenty-five dollars somewhere to buy more tools with, secured another bench, and made a start in one of the basement rooms by having the boys make some boxes and other articles that were needed about the school.

"This was a small beginning, but it attracted more or less attention; we had a good many pleased visitors; we were arousing an interest in the work; we even succeeded in inducing a few of the members of the board to contribute toward the necessary expense.

"This work was all in the upper grades; what could be done for the lower grades? The supervisor of the grades took hold of the work and offered to teach the teachers. It was made purely voluntary. Those teachers who were willing met at stated intervals and received instruction in raffia work, basketry, etc.

"Up to this time there had been no provision made by the board for the purchase of material, but by the close of this first year we succeeded in getting a small appropriation. We had succeeded also in getting a good many people interested in manual training, not only the boys and girls and the teachers and some of the members of the board, but a good many people outside the schools.

"A committee from the Woman's Club came to visit the school to learn more about the work. I took them down to the basement and showed them the room labeled 'Manual Training.' The committee was anxious to know what to do. We decided that the best thing to do was to create and develop public sentiment. The committee recommended that the Woman's Club pledge itself to raise five hundred dollars and undertake to convince the board that the people are interested in the work and want it in the schools. The club voted to adopt the committee's recommendation.

"The next fall term Mr. Adams came to work with us and we started to fit up a shop. The boys, with the help of the instructor, built six benches accommodating four pupils each. We bought some tools, a very meager equipment, and began work with classes—high school pupils in the forenoon, and seventh and eighth grade pupils in the afternoon.

"Last year we added six wood-turning lathes to our shop equipment, and the present year a band saw and new bench tops.

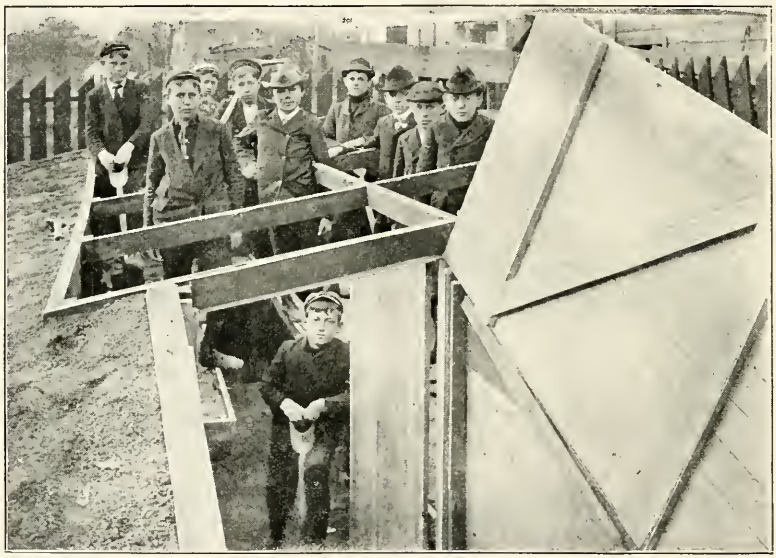
"I may say right here that one of the principles upon which our work is based is that everything that is made should be of some use, either to the maker or to another.

"We have only one school in which every grade has some form of handwork. At the Irving school we have raffia work and weaving in the first four grades, sewing in the fifth, sixth and seventh, and shop-work in the seventh and eighth grades. We also have cooking now in all our eighth grades and the first year of the high school, as well as the shopwork.

"In what I have to say to you here tonight I am including under the term manual training anything that gives opportunity for work in manual forms. For example, at one of our schools the boys with the assistance of the janitor dug a flower pit for

use in connection with our nature study work. The pit is constructed like an outdoor cellar and is provided with a glass roof; it is sixteen feet long, ten feet wide, and about six feet deep—the bottom being about four feet below the level of the ground.

"In this flower pit were set out slips by the grade children. To the first grade children were given slips of *impatiens sultana;* second grade, *coleus;* third grade. *salvia;* to the children of the other grades, red, white and pink *geraniums.* Each child had his own slip which he planted, watered and cared for. The slips were set out in boxes which had been made in the manual-training shop. Later on as the plants began to grow and demanded more room we bought three thousand small pots and gave them out. The children were then instructed as to how to pot the plants. The

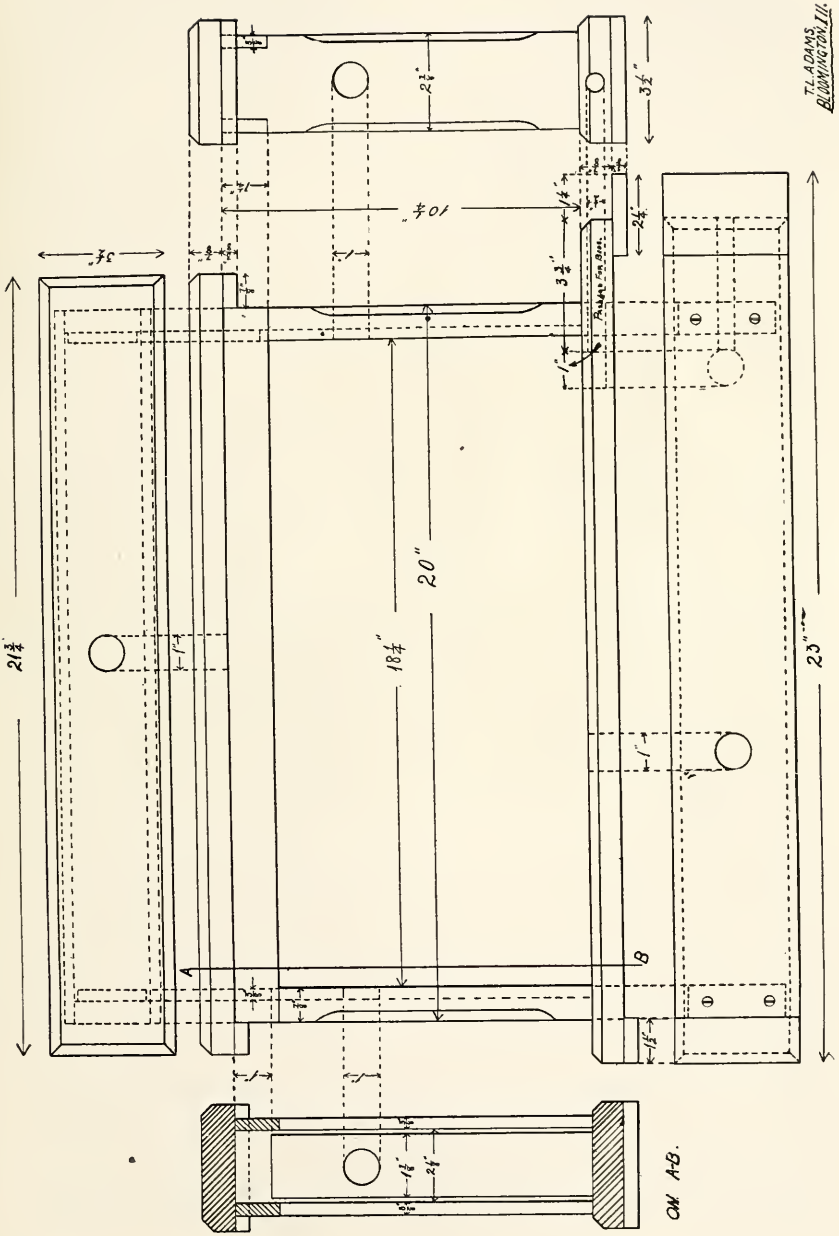


potting having been accomplished, the pots were collected and placed in the pit to be kept over winter, the plants to be used in the spring in setting out beds. Each pot was provided with a label containing its individual owner's name.

"Now there is no question in my mind as to the value of the work to those boys in the digging and the construction of those pits, and later on also in helping to lay out the beds of flowers for the beautifying of the school grounds.

"By spring we shall have several thousand fine plants to set out in beds, and thus we shall be able to connect the work of the boys directly with the beautifying of the school grounds. I believe firmly in the value of this cultivation of the appreciation of the beautiful in the world around us. We have found that this work appeals very strongly to a certain class of boys—not all, however.

"During the present year in our manual-training shop we selected a number of our best workers and constructed nine domestic-science tables for use in three of the ward schools. These tables are quite complete, are furnished with cupboards, shelves, drawers, zinc tops, etc., and answer our purposes nicely. The construction of


T.L. ADAMS
BLOOMINGTON, ILL.
21¾"
20"
18¼"
23"
3½"
2½"
2¼"
3¼"
1¼"
1⅛"
1"
B
CM. A-B.

these tables involved quite a variety of work, and because of the practical nature of the undertaking and the definite end in view the boys took hold with a great deal of interest.

"The problem of expense comes to us as it comes to all. We have our pupils purchase their own material. The teacher, the tools, and the place to work are furnished. In the case of articles made for the use of the school, of course, we provide the material."

Mr. Stableton then exhibited to the association a model observation bee-hive that had been made in the Bloomington schools. It is designed to accommodate a single comb taken from an ordinary standard hive. It has an ingenious arrangement which permits it to be placed on the inside ledge of any school window giving the bees access to the open air yet preventing their entrance into the school room. If a comb be taken from an ordinary hive with about a pint or so of bees and placed in this observation hive the bees immediately set about establishing a colony of their own by raising a queen. This they will start to do within two days, preparing several royal cells. In sixteen days the queen hatches out and the remaining royal cells are destroyed. The observation hive is provided with glass sides through which the various activities of the bees may be safely and easily observed. The study of the pollen brought in by the bees leads off into botany, another interesting field of nature study. After observing these hives for a time both teachers and pupils began to ask questions; they wanted to know more about the bees, their habits and life history; and so they were referred to books in the public library. Mr. Stableton expects to have one of these hives in every school in Bloomington, and they are being made in the manual-training shop for that purpose.

Mr. Stableton concluded his address by having thrown upon the screen over fifty photographic illustrations of the manual-training and nature-study work carried on in the Bloomington schools. There were slides showing classes in the various forms of handwork in the grade rooms, the wood-working shop, the printing office, the flower pits, the observation hive in action, flower beds in full bloom, and portions of the annual school flower show. The photographs were excellent and the lantern slides unusually well executed for this class of work.

The audience gave the closest attention throughout and indicated its approval most generously at the close of the address.

Mr. Bennett in introducing the next speaker said that he was glad that the constitution of the Illinois Manual Arts Association is broad enough to include some who are not teachers and that the list of charter members includes the name of the president of the board of trustees of Bradley Institute, Mr. Oliver J. Bailey.

Mr. Bailey, after speaking of his pleasure in being a member of the association, proceeded to comment in a very practical and appreciative manner upon the address of the evening, concluding with the motion that a vote of thanks be extended to Mr. Stableton for his most interesting and instructive address. The motion was promptly seconded and carried with applause.

Superintendent N. C. Dougherty, of the Peoria public schools, was introduced and spoke of the changes that have come over the school during the past twenty-five years, and showed that these changes are in part attributable to the new spirit that has been brought in by the manual-training idea.

The secretary's report was then presented including the reading of the minutes of the previous meeting and an outline of the work accomplished by the association through its executive committee.

The following candidates, as recommended by the executive committee, were elected to membership:

August Ahrens, director of industrial arts; Quincy, Ill., public schools.

Miss Anna G. Brown, director of manual training, Jacksonville, Ill., public schools.

Sheldon L. Dickinson, head teacher, Von Humboldt School, Chicago.

Joseph W. Paul, assistant in manual training, Rockford, Ill., public schools.

Charles F. Perry, in charge of mechanical department shops, University of Illinois, Urbana.

Sinclair J. Work, director of manual training, Elgin, Ill., public schools.

The following members were elected by ballot to serve as nominating committee and report at the Saturday morning session: C. H. Bailey, Decatur; P. W. Thomson, Peoria; A. P. Laughlin, La Grange.

At the conclusion of the business meeting the president's address was delivered by Charles A. Bennett, Bradley Institute; subject: "The Illinois Manual Arts Association; Its Field and Its Work." This address will be published in full in the July number of this magazine.

The Friday evening session adjourned at 10:20 p. m.

At 9:25 a. m. Saturday the Association was called to order by President Bennett. The executive committee had previously given notice of its intention to save time for discussion by publishing in advance of the meeting the leading papers programmed. The principal speakers were allowed ten minutes in which to present any new matter or to epitomize the published papers.

The report of the Committee on Manual Training for Rural Schools was called for. Two members of this committee were unable to be present at the meeting: L. A. Hatch, State Normal School, De Kalb, chairman; O. L. McMurry, Chicago Normal School. A preliminary report of a part of the committee's work, however, had been published, and was before the association; see the MANUAL TRAINING MAGAZINE, Vol. 6, No. 2, January, 1905, pp. 75-81. The discussion of the topic was opened by the third member of the committee, A. P. Laughlin, LaGrange.

Mr. Laughlin's report appeared somewhat at a disadvantage in the absence of the complete work of the committee, but he consented to go on and make the best of the situation.

The subject was then thrown open to a general discussion which was participated in quite freely. The following members spoke: P. W. Thomson, Peoria; H. G. Hatch, Rockford; E. H. Sheldon, Chicago; L. H. Burch, Macomb; L. I. Brower, Springfield; Miss Anna G. Brown, Jacksonville; J. W. Paul, Rockford; C. W. Kent, Rock Island; Louis A. Bacon, Indianapolis; Miss C. Curtis Townsend, Quincy; H. S. Dickinson, Moline; Douglas Donaldson, Joliet; I. S. Griffith, Oak Park; F. D. Crawshaw, Peoria. The problem is one that evidently engages the interest of many of the members, and the discussion, while profitable to all, made it clear that the subject has not been exhausted. Upon motion, it was decided that the investigation of the rural school problems be continued by the committee of the association increased to five members.

The next topic was "Manual Training Equipments" presented by Charles H. Bailey, director of manual training, James Millikin University, Decatur. This paper had been published in the MANUAL TRAINING MAGAZINE for January, and Mr. Bailey simply outlined the plan upon which he had conducted his study and his ob-

ject in so doing. Considerable merriment was provoked by the statement that in reply to a request for information one superintendent in an abscure town wrote that there was very little manual training in the schools of his town, but that "in the high school one of the teachers had been doing a little work with the boys in foot ball in the fall and some track work in the spring."

The topic was further discussed by Clarence E. DePuy, department of mechanical engineering, Lewis Institute, Chicago, who stated that as his experience had been largely with wood-working and more advanced shopwork, his remarks would be confined to wood-working.

Mr. DePuy suggested the following as the minimum of equipment: A bench with a vise, backsaw, jack plane, try square, marking gauge, knife, one or two chisels, hammer, rule and oil stone. If possible, add to these cross-cut and rip saws, and make the edge tools individual. The presentation of this topic also elicited a lively and practical discussion.

Clinton S. Van Deusen, Bradley Institute, was then introduced to speak on "Methods of Wood-Finishing Suitable for the Manual-Training Shop." Mr. Van Deusen's paper had been published in the January number of the MANUAL TRAINING MAGAZINE, but certain additional and later experiments remained to be reported and a quantity of new material was presented. The actual samples of wood, the apparatus used, etc., were exhibited and many of the points were brought out much more clearly than is possible in a written account.

Reference was made to an article on a "Secret Process of Coloring Gray Maple" that appeared in the *Grand Rapids Furniture Record* for December, 1904.

The discussion was opened by E. H. Sheldon, Chicago, whose paper will be found elsewhere in the magazine.

The last number of the program was a paper closing the discussion on wood-finishing written by Professor Frank Forrest Frederick, University of Illinois, Urbana. In the absence of Professor Frederick the paper was read by the secretary.

Following the program there was held the regular business meeting. The question of the reduction of the membership dues to one dollar was taken up and freely discussed on both sides. When put before the house it was determined by a decisive vote to retain the dues at three dollars, thus committing the association to an aggressive work in the state, and providing the funds wherewith the same may be prosecuted.

The association also formally recorded its hearty endorsement of the plans outlined in the president's address and requested its publication in the MANUAL TRAINING MAGAZINE.

The following candidates, as recommended by the executive committee, were elected to membership:

Louis A. Bacon, supervisor of manual training, Indianapolis, Ind., public schools.

A. L. Clark, director of manual training, Oak Park, Ill., high school.

W. R. Davis, instructor in manual training, Evanston, Ill., public school.

H. S. Dickinson, director of manual training, Moline, Ill., public schools.

W. M. Jones, special student in manual training, State Normal University, Normal.

Miss Anna S. Lagergren, instructor in manual training, State Institution for the Blind, Jacksonville, Ill.

Miss C. Curtis Townsend, supervisor of primary manual arts and drawing, Quincy, Ill., public schools.

The re ort of the nominating committee was adopted, and the present officers re-elected for another year: President, Charles A. Bennett, Bradley Institute; Vice-President, Ira S. Griffith, Oak Park; Secretary-Treasurer, William T. Bawden, Normal.

It was decided to accept the invitation from President James to hold the 1906 meeting of the Association at the University of Illinois.

After the transaction of other necessary business the meeting adjourned at 12:45 P. M.

WILLIAM T. BAWDEN.

SCHOOL CRAFTS CLUB.

A meeting of the School Crafts Club was held at the Hotel Brevoort, January 13, 1905. The principal features of the program were Dr. J. P. Haney's address on "The Preparation of Professional Papers," and Prof. C. R. Richards' account of "The Handicrafts of India and Burma." The latter, which was illustrated by lantern sildes, will be found in full in the January and the present numbers of the MANUAL TRAINING MAGAZINE.

The followihg synopsis, which does scant justice to Dr. Haney's eloquent appeal for careful and systematic effort in professional work, is the best report at present obtainable:

The Selection of Topic.

1. Constructive and developmental.
2. Analytical and comparative.
3. Historical.
4. Philosophical and critical.

To discover topics view one's work in the light of the points suggested above.

Necessary overlapping of suggested divisions. *Unity* comes from keeping one main point in view.

Keep continually turning subject over in mind, noting good subjects for consideration. Examples cited.

The Gathering of Material.

After determination of topic make *first* or *general* analysis. Decide upon main divisions. Try to think the article from start to finish.

Make a tentative synopsis on these lines.

Consider each main division and make systematic notes upon it.

Adopt uniform size of paper for all notes and manuscripts.

Make specific reference to article and page when taking notes.

The Organization of Material.

Collate on lines of tentative synopsis.

Prepare detailed synopsis, using plenty of paper.

Develop introduction, exposition, summary.

Keep main and subdivision titles, but aim to make direct statements following each.

Particularize details in numerical order.

Seek to have sequence show the connection plainly.

When synopsis is complete the sense of entire article should appear as a series of short, crisp sentences.

The Development of Material.

Prepare for writing first draft of article by careful reading for twenty minutes or so of some succinct straight-forward writer. Note his simplicity of statement. Aim to make yours as simple.

Use short sentences. When a long sentence gives you trouble, break it into shorter ones. Keep a dictionary of synonyms at hand.

Keep logical connection of parts plain. Make it possible to use thus, hence, therefore, etc., and do use these words frequently. They help the reader.

All subdivisions should serve as texts for topics paragraphs. In first draft do not worry over elegance of form—aim for clear-cut simple statement.

The Editing of the First Draft.

Read aloud first draft, keeping sharp eye on relative pronouns. See that tenses of related verbs agree.

Take the reader's point of view and elaborate any explanation that is not plain. Rewrite each sentence till perfect smoothness results.

Second draft should be completed as for printer—wide margins and but one side of paper used.

Books That Will Help.

Barrett Wendell—English Composition. Scribner.

George P. Baker—The Principles of Argumentation. Ginn.

Scott & Denny—Composition, Rhetoric. Allyn & Bacon, Boston.

C. Johnson—Elements of Literary Criticism. Harper.

The usual exhibition of school work, etc., formed a part of the evening's program. A. W. Garritt gave an interesting account of some experiments in commercial work, which is now an important feature in the New York public school course. Some fine examples of posters, suitable for schoolroom decoration, were shown by Herman Bucher. Specimens of school work were presented by Walter A. Cleveland and others. Refreshments were served as usual at the close of a most pleasant and profitable evening.

—W. F. VROOM.

CURRENT ITEMS.

Clinton S. Van Deusen.

The National Educational Association is to meet this year at Asbury Park and Ocean Grove, N. J., July 3-7. Arthur H. Chamberlain, the president of the Manual Training Department is arranging an attractive program, and a very interesting meeting is expected. The department is to devote one half-day session exclusively to its own work. On the second day it will hold a joint session with the Secondary Department and on the third day a joint session will be held with the Art Department. In addition to the President's address, Frank M. McMurry of New York City has been secured for a part on the program of the first day, and others will soon be secured. For the second day's session Charles H. Keyes of Hartford, Conn., Charles F. Warner of Springfield, Mass., and Miss Katharine E. Dopp of the University of Chicago, are among those to take part. At the joint meeting with the Art Department such men as James P. Haney and Charles R. Richards of New York, and Mr. Kissack of St. Louis, will be heard from.

The Eastern Manual Training Association is making preparations for its next annual convention, which on invitiation of Vice-president Pickwick, meets this year in Newark, N. J. The executive committee have fixed upon June 30 and July 1, as the dates. From the fact that the National Educational Association holds its sessions during the following week and only a short distance away, it is expected that this coming convention will be attended by more people interested in manual training than any meeting in the history of the Association.

Five sessions will be held in the two days and although the program is not definitely arranged, enough has been settled to assure a very profitable meeting. Among the speakers secured are such men as Dr. John Hughes, of Toronto, Canada; Capt. Crawford, of the United States Navy; Henry C. Pearson, of the Horace Mann School of Teachers College, New York City; Dr. James P. Haney, Director of Manual Training, New York City, and others of equal prominence. Efforts are being made to secure speakers who can give some thoughts on manual training from the standpoint of other nations, which will be of benefit to the American idea. A few of the subjects to be presented are; "The Development of Creative Instinct through the Manual Arts," "Elementary Principals in Manual Training," "The Correlation of Nature Study and Primary Manual Training," "Pottery," etc. One session will be devoted to domestic science, and a feature of it will be the report of the committee appointed last year to arrange a course in handwork, for girls in the grammar and high school.

The "Proceedings of the Philadelphia Convention" of last summer are now being distributed. It will be noticed that, typographically. the book is an improvement upon previous editions, while the articles contained, notably those upon the subject of grade work and domestic science, form no small contribution to the literature of manual training. The book is sent free to members; to others the price is twenty-five cents. Appended to the "Proceedings" is a "Directory of Manual-Training Teachers" which is the latest and most complete thus far issued. Every year additions and corrections will be made to render this list as full and accurate as possible.

The plan for establishing branches of the Association, provided for at the Philadelphia meeting, seems to be receiving favor, and the formation of such organizations will undoubtedly tend to increase the membership and strength of the Association. In Allegheny Co., Pa. there is such a branch consisting of about fifty members from the schools of Allegheny, Pittsburg, Homestead and vicinity. Last year several lectures were delivered by Dr. H. H. Holbrook on psychology, which were most excellent and instructive. These meetings are well attended and discussion free to all.

THE Western Drawing and Manual Training Association will hold its twelfth annual meeting in Chicago, April 25 to 28 inclusive. The strength of the program is indicated by the following selections: Address: "Education in Art and Handicraft as a Factor in Social Development," Miss Jane Addams, Hull House. Illustrated Lecture: "The Arts and Crafts of the Orient," Prof. Charles R. Richards, Teachers College, New York City. Illustrated Paper: "Relation of Art Instruction and Manual Training in Public Schools," Miss Wilhelmina Seegmiller, Indianapolis. Paper: "Art-Crafts and Drawing in Grammar Grades," William E. Roberts, Cleveland. Illustrated Paper: "Handwork in an Elementary School," Fred. D. Crawshaw, Peoria; Dr. Katherine E. Dopp, The University of Chicago; Luther A. Hatch, De Kalb Normal School, and Supt. W. H. Hatch, Oak Park. Illustrated Report: The Berne Congress of 1904, Charles M. Carter, Denver. Illustrated Lecture; "Pictorial and Decorative Art," Mrs. Lucy F. Perkins, Evanston. Paper: "Landscape Painting," Prof. F. F. Frederick, University of Illinois. Paper: "The Essentials of a Normal Course in Drawing and Manual Training," C. S. Hammock, Cedar Falls, Iowa. Illustrated Lecture: "Value of the Line," Director W. M. R. French, Chicago Art Institute. All the sessions will be held in the Art Institute, and the Institute galleries will be used for exhibiting drawings and manual-training work.

THE Teachers' Training College of the German Association for Manual Instruction is to give a summer course, which will open July 3. This is the school at Leipsic of which Dr. Pabst is director.

TEACHERS' courses in manual training and domestic economy have just been announced by Bradley Polytechnic Institute to open in September, 1905. This action has come about as the result of a growing demand for special teachers of these subjects. Several teachers have already received their training at Bradley, but no normal course had been formulated until recently. Now it will be possible for a prospective teacher with adequate preparation to secure a teacher's certificate after four or six quarters of work, one or two of which may be accomplished in the summer school. The course for manual-training teachers is made sufficiently flexible to allow of specialization in either elementary or secondary-school work.

LOUIS ROUILLION, adjunct professor of manual training in Teachers College, Columbia University, at the instance of Sir Horace Plunkett, has been appointed chief inspector of technical education for Ireland. Professor Rouillion is a graduate of Cornell, class of 1891, and before becoming connected with Teachers College he was a technical instructor in Pratt Institute. He resigned his professorship and sailed for Ireland in February to make a preliminary survey of his new field.—*School Journal.*

BY the terms of the will of Charles H. Hackley, which was recently filed in Muskegon, Mich., the endowment fund of the Hackley Manual Training School of

that city is to be increased to $610,000, with provision for a further increase at the death of Mrs. Hackley.

THE development of the new education in Canada is evidently lagging several years behind the United States. This is indicated by the fact that a lady trustee of the Toronto schools recently moved for the dismissal of the superintendents of music, art, manual training and domestic science, though the motion was defeated by a vote of six to four. Another motion to submit the question of manual training and domestic science at the municipal elections next January to a vote of the people is likely to be carried, and the manual-training people are hoping to come through the fire of investigation and criticism refined and strengthened. Such trials were not unknown to the earlier workers in manual training in the United States, but these subjects are now so thoroughly rooted in the hearts of the people that they devote their time trying to get them in the curriculum instead of getting them out.

F. W. KENDALL, who is in charge of the manual work at the La Salle-Peru Township High School, at La Salle, Ill., is now carrying on a teacher's course in manual training. This work is provided by the school for the benefit of the teachers of the community, and no charge is made for the instruction. The class meets Saturday mornings, and fifty-three teachers have appeared for the work.

AT the annual meeting of the Iowa Teachers Association, held recently in Des Moines, considerable interest was shown in manual training. L. D. Harvey, of Menomonie, Wis., addressed the general association on the subject, and there was also a department meeting on manual training. A manual-training and drawing section was organized for next year with C. S. Hammock, of Cedar Falls, as leader and Miss Eleanor Flanigan, of Dubuque, as secretary.

TWO recent graduates of the Normal Training School at Oswego, N. Y., have accepted appointments as follows: Theodore Breckheimer to teach manual training in the public schools of Minneapolis, Minn. Harvey W. Austin as teacher of manual training in the Manual Training and High School, Camden, N. J.

IT is proposed to hold, at the University of Illinois during the last week in June, a State Conference on the "Problems of the Rural School." Domestic science and manual training are among the subjects to be considered.

ALLEGHENY, PA., is pushing to the front in manual training, as arrangements have been made for the erection of three new buildings for manual work, two in the eleventh ward, both large and finely equipped, and one in the second ward, the later to cost $140,000.

THE manual training and art department of the Central Illinois Teachers Association met at the Franklin School in Peoria, Ill., March 31 and April 1. William T. Bawden, of Normal, Ill., acted as chairman of the meeting. W. C. Garretson, of Terre Haute, Ind., was the main speaker from the manual-training standpoint.

An important feature of the meeting was the exhibit of manual work as carried on in the Franklin School.

BRADLEY POLYTECHNIC INSTITUTE has added cooking, furniture construction and applied design and color work to its list of summer courses. Each of these is a full-credit course, requiring three hours' work a day.

LOUIS A. BACON, of Indianapolis, Ind., is to have charge of the manual-training work at the summer school to be held at the University of Illinois the coming season.

THE Arts and Crafts Society of Grand Rapids, Mich., working under the direction of Forrest Emerson Mann, is having a very successful year. It is also exerting considerable influence on the school work of the city, as many of the city teachers take work in its classes and later make use of the knowledge thus gained to enrich their school work.

THERE has recently been formed a Manual Arts Section of the Ontario Educational Association, and its first meeting will be held at Toronto University, during Easter week. The following program has been prepared for this meeting: "Art Applied in Manual Training," by Miss J. P. Semple; "Methods in Working Drawings," by A. T. Hatch; "A Beginner's Difficulties," by J. H. Wilkinson; Round Table: (a) "Plans and Elevations," by A. J. Rostance; (b) "Power vs. Product," by J. C. Hamilton; (c) "Originality—How Encouraged," by Miss A. Rose; (d) "Value of Accuracy," by D. W. Houston; (e) "Stains and Finishes," by G. A. Lucas; "Paper and Cardboard Work," by Miss Semple; "Clay Modeling," by G. Usborne; "Aims and Objects of Manual Training—What we have done and expect to do," by S. Pickles; "Educational Principles Applied in Manual Training," by C. C. Arthur: "Arts and Crafts," by G. A. Reid.

THE University of Illinois will hold its seventh annual exhibit of public-school work in drawing, May 11 to 13. This exhibition will include all classes and varieties of drawing executed in the public schools. Especially good examples of work are awarded honorable mention by a competent committee.

The School of Elementary Art Instruction, Chicago, has recently moved into new quarters in the same building with the Academy of Fine Arts. Mrs. Hannah Johnson Carter, the director of the former is also an instructor in the latter.

THE business men of Greensboro, N. C., are showing their interest in the boys and manual training by providing means to carry on a night school, where boys may receive instruction in Venetian iron work, knife work, basketry, pottery, work in copper, brass, leather, etc. This school is known as the Arts and Crafts Association.

A DEPARTMENT of Manual Arts has recently been organized at Howard University, Washington, D. C., which has for its aim the training of teachers for work in manual training and domestic science. A two-year professional course is given. Fred. C. Whitcomb, a graduate of Teachers College is director of the department, and there is an enrollment of over sixty students for this year.

MR. MEISSNER, of Washington University, is in charge of the manual work in the new manual-training school which has recently been equipped in the twentieth ward, Pittsburg, Pa.

THE coming summer session of Teachers College, at Columbia University will provide, as usual, some interesting and valuable courses for manual training teachers. Five courses in manual work are to be given, as follows: Manual Training for lower grades, by Miss Weiser; Woodworking for elementary schools, by Mr. Noyes; Woodworking for secondary schools, by Mr. Weick; Metal and leather work, by Mr Martin; School pottery, by Mr. Boone. The last course is given for the first time this year.

THE following program of the meetings of the Boston Manual-Training Club is evidence that it is an organization for business. December 30, Annual Dinner. January 7, Frank M. Leavitt, supervisor of manual training in Boston, read a paper on "The Place of Technique in Elementary Manual Training." February 11, Walter Sargent, of the State Board of Education, addressed the Club on the subject, "A More Artistic Manual Training." March 4, Vesper L. George, of the Boston Normal Art School, addressed the Club on the subject, "Design."

THE Central Labor Union of Boston has recently placed itself on record as opposed to the use of the Franklin fund to establish a trade school, and favors the establishment of an institute similar to Cooper Institute of New York.

PHILADELPHIA.

THE Local Branch of the Eastern Manual Training Association has been holding some interesting meetings during the winter. The President of Drexel Institute, Dr. James MacAlister, kindly allowed the use of a large lecture room for the purpose and extended to the Association many courtesies. The program thus far has been:

Oct. 7, '04, Leslie W. Miller, "The Artistic Aim in Manual Training, What It Means and What It Does Not Mean."
Nov. 4, George Astley, "The Mechanic Arts Teacher, What Should Be His Qualifications?"
Dec. 2, H. W. Hetzel, "Manual Training and the Wages Question."
Jan. 6, '05, Round-table discussion on assigned questions.
Feb. 3, Miss Elizabeth Burns. "At What Age Should Tool Work Begin?"
March 3, Miss Mary E. Hanna, "Is Cookery Manual Training?"
April 7, Robert F. Powell, "The School Garden; Its Place in the Manual Training Program." (Illustrated.)

CHAS. W. WHITE lately resigned his position as Instructor of manual training in the Swarthmore High School, his place being taken by Miss Lucy A. Linville. Mr. White is now in this city as instructor in the Friends' Central School.

GEORGE W. NORTON is now connected with the New York city schools. He occupied the position of Instructor in Sloyd at Girard College for six years.

J. LOGAN FITTS, who for nine years had been connected with the Central Manual Training School as instructor in metalwork, recently resigned his position to become superintendent of a large manufacturing concern. Mr. Fitts' exceptional abilities as a teacher, combined with his thorough knowledge of his craft, made it difficult to find a suitable successor.

DR. ANDREW J. MORRISON, Principal of the Northeast Manual Training School was absent during a large part of the winter on account of a severe sickness.

DR. ERNEST B. KENT, formerly of Indianapolis, is the new superintendent of the B'nai B'rith Manual Training School, succeeding Mr. Hetzel, now of the Central Manual Training School. Dr. Kent's work is among the Russian Jews of the downtown section—a class very much in need of such help, and, it must be said, quick to profit by the opportunity.

THE new building of the Northeast Manual Training School has just been completed and turned over to the city authorities. It occupies the half block on the east

side of Eighth Street between Lehigh Avenue and Somerset Street. It is expected that, both in the building itself and its eqiupment, the new school will be one of the finest in the country.

THE Board of Education have advertised for bids for the Southern Manual Training School which is to be erected at the corner of Broad and Jackson streets. The building will be one of the most modern in equipment of any school in the city and $330,000 are available for its construction and equipment.—H. W. HETZEL.

ROCHESTER, N. Y.

ON January 20th, (1905), the teachers of Manual Training and others interested in the manual arts and related subjects, met and perfected an organization. The name of the association is the Rochester School Crafts Club, and the object is to promote social intercourse among its members, to stimulate an interest in educational handwork in the community, to study and discuss such questions concerning manual training and the other subjects of the school curriculum as may be of mutual interest and benefit.

The following officers were elected: President, W. W. Murray, Supervisor of Manual Training in the public schools; Vice President, Charles F. Moore, of the Mechanics Institute; Secretary, Miss Leonora Wooden; Treasurer, Mark W. Way, principal of No. 20 school; Librarian, Miss C. E. Toaz.

The membership list contains thirty-five active and a number of honorary members.

IN January the length of the session for benchwork and sewing in the seventh and eighth grades was increased from one hour to two hours. Two more grammar schools have recently been provided with benches and tools. This makes the total number of grammar schools with bench outfits, nineteen.

TWO years ago plans were made for the introduction of manual training in the high schools of this city, but owing to the crowded condition of the schools it was necessary to defer it until the completion of another new building, which, it is expected, will be ready for occupancy by the first of next September. These two high schools will be equipped for wood and light metalwork.—W. W. MURRAY.

WASHINGTON.

THE Northwest is as progressive in education as in real estate booms, and though the latter make more noise, the attention is not distracted from the real value the boys and girls are to be to a country so well favored as this one.

SEATTLE, with a population of nearly 150,000, has 1750 in its high school. The manual training department has over 400 of these pupils. 300 boys are taking carpentry, wood-turning, pattern-making and molding, cabinet-making, forging and wrought-iron work, together with the usual work in mechanical drawing. 100 girls are taking sewing, dressmaking and millinery, together with the freehand drawing and design. The equipment for accommodating these pupils is arranged for class units of 24 pupils. All these pupils carry three academic studies in addition to their manual training, the latter subject counting as the fourth study. The work for the girls is now in its second year. Plans are now in the making for the department of domestic science to be in operation next September. The girls are now planning the dining room, its arrangement and design, the linen to be made by the girls in sewing and the furniture by the boys in the cabinet classes. The electric fixtures are to be

made by the class in forging. It is thought this work can be done by the pupils and not lose anything of value in the handwork to be taught in the various classes.

The rapid growth of the school requires a new forge shop. A temporary frame building 32x48 feet is now being built by the boys, in which they will install a down-draft system of 18 forges. A permanent stone addition will later be made to the high school building for the accommodation of the Manual Training Department, which is now occupying the basement of the present structure. The experiment is thus being tried of using the boys and girls and the equipment for the service of the whole, believing that application of theory and practice to needed ends is possible in a public-school system.

There are six centers for woodwork in the 32 public schools, accommodating over 1500 boys of the 6th, 7th and 8th grades. Classes of 24 pass to and from the centers to the nearest school, receiving one lesson of 90 minutes a week. This grade-work is also in its second year. One or two more centers will be opened next year. The girls of these grades take sewing taught by the regular teacher, while the boys are at the center. In the 5th grade paper and cardboard work is the handwork closely correlated with drawing and used as expression work in the other subjects. The handwork in the first four grades makes use of paper, raffia, reeds and clay and finds abundant illustration material from the local Indian traditions, and their basketry, still practiced in some of the tribes. The correlation in these grades is very close, the handwork being a means of expression in all that the child learns. B. W. Johnson, Vice Principal of the High School, is director of Manual Training.

Georgetown, a settlement about a large brewery three miles south of Seattle, has manual training and drawing in the eight grades. and the past year completed a modern school building with ample provision for handwork and drawing, with a lecture room for the use of the steropticon in grade work. Miss M. E. McCormack is in charge of the manual training.

Ballard, a saw-mill town just north of Seattle, is making a similar use of hand-work. The benchwork for the 7th and 8th grades and first year of the high school is accommodated in one center taught by James Johnson.

Many inquiries are coming in from other cities and towns indicating a rapid introduction of the work in the near future.

Spokane, in the eastern part of the state, this year made an excellent beginning with two centers for the 7th and 8th grades, in charge of O. L. Whitcomb. The work is very popular and Mr. Whitcomb is now teaching a normal class after school once a week, in knife work, preparing the teachers for the introduction of this work in the 6th grade. Manual training for the high school, first year, will be started next September. A fine large addition to that building has just been completed, affording room in the basement for the beginning in woodwork and mechanical drawing.

The outlook is very good for the best development of manual training in its right relation to education in the Northwest.—B. W. Johnson.

NEW YORK CITY.

The regular monthly conference of the corps of shopwork instructors was held at P. S. 40, 310 East 20th street, on Monday, Jan. 9th, at 4 p. m., Dr. James P. Haney, director, presiding. During the coming term emphasis will be placed upon the making of communal models in both terms of the eighth year. About one third of the

term will be devoted to this work. Models to be used in the class-room in the study of science are especially desired.

To this end every instructor was furnished with a copy of the course of study in science for all grades. In this way valuable apparatus will not only be obtained, some of which can be procured in no other way, but quite a saving in the cost of science teaching will be effected.

Mr. Wolfe, the instructor at P. S. 40, showed and explained several elaborate science models so constructed by his classes last term. One of these was for the use of the class in astronomy and showed the sun, earth and moon. The sun was represented by a globe containing a powerful electric light. By means of simple apparatus the moon was made to revolve about the earth and the earth around the sun, thus showing the places and reasons for eclipses, change of seasons, etc. A second model was used by the classes in physical geography. It showed mountain and river systems besides waterways of all kinds, even including the locks in the canal. The river could be traced from its source among the glaciers of the Alps to its mouth in the broad ocean. These are practical examples of "manual training made serviceable to the school."

CALIFORNIA.

THE Southern California Teachers' Association has taken an advanced step by forming a council of education. Of two topics discussed recently, manual training was one. Miss Edna A. Rich of Santa Barbara, presented a paper with data and map, tracing the growth of manual training in Southern California since its beginning several years ago. Dr. Chas. B. Gilbert of New York City, discussed some of the possibilities inthe manual-training field. Jas. D. Graham suggested certain practical questions, both as to possibilities and difficulties involved in the work. These points were discussed from the standpoint of work for girls by Miss Florence A. Stevenson of Los Angeles. Arthur H. Chamberlain took up the discussion from the standpoint of work for boys and summarized the discussions of the session.

It is a significant fact that the Council should devote a large portion of its first annual meeting to the study of handwork, and this alone will do much to stimulate advance in this locality.

THE February meeting of the Pacific Manual Training Teachers' Association was held in Los Angeles, the following list of officers having been recently elected to serve during the present year: President, Ernest A. Batchelder, Throop Polytechnic Institute; vice president, Arminta McMahan, Redlands; secretary, Ella V. Dobbs, Pasadena; treasurer, Ada Blanchard, Los Angeles.

H. M. Snell recently connected with the manual-training schools in the Northwest Territory, presented an able paper in which the methods of the English and Canadian schools in manual training were clearly brought out and these contrasted with the Swedish sloyd work. Preceding the program the members of the Association were permitted to examine the partially completed buildings of the manual-training high school, now being constructed in Los Angeles. Many new and modern features are to be introduced into the buildings and equipment and these were explained by Prin. J. H. Francis.

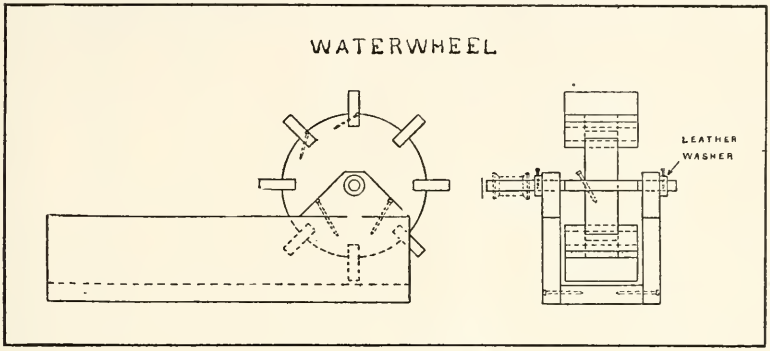
RICHARD F. PHELPS, formerly located at Fresno, has taken charge of the manual training in Alameda. He is assisted by Miss E. Marcia Taylor.

THE work in Fresno is in charge of L. A. Buchanan, a man of wide experience.

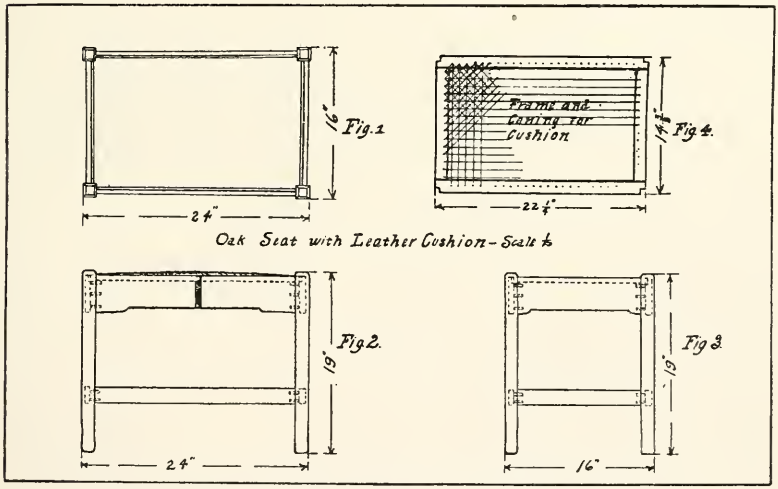
OAKLAND is waking up to the need of industrial art in the public schools and has taken the initiative by appointing F. R. Cauch to take charge of the work.

BREVITIES.

The competition announced in the October and January numbers closed February 1, and the committee of judges met February 18. This consisted of Professor, Clarence E. DePuy, director of shopwork, Lewis Institute, Chicago; Louis A. Bacon

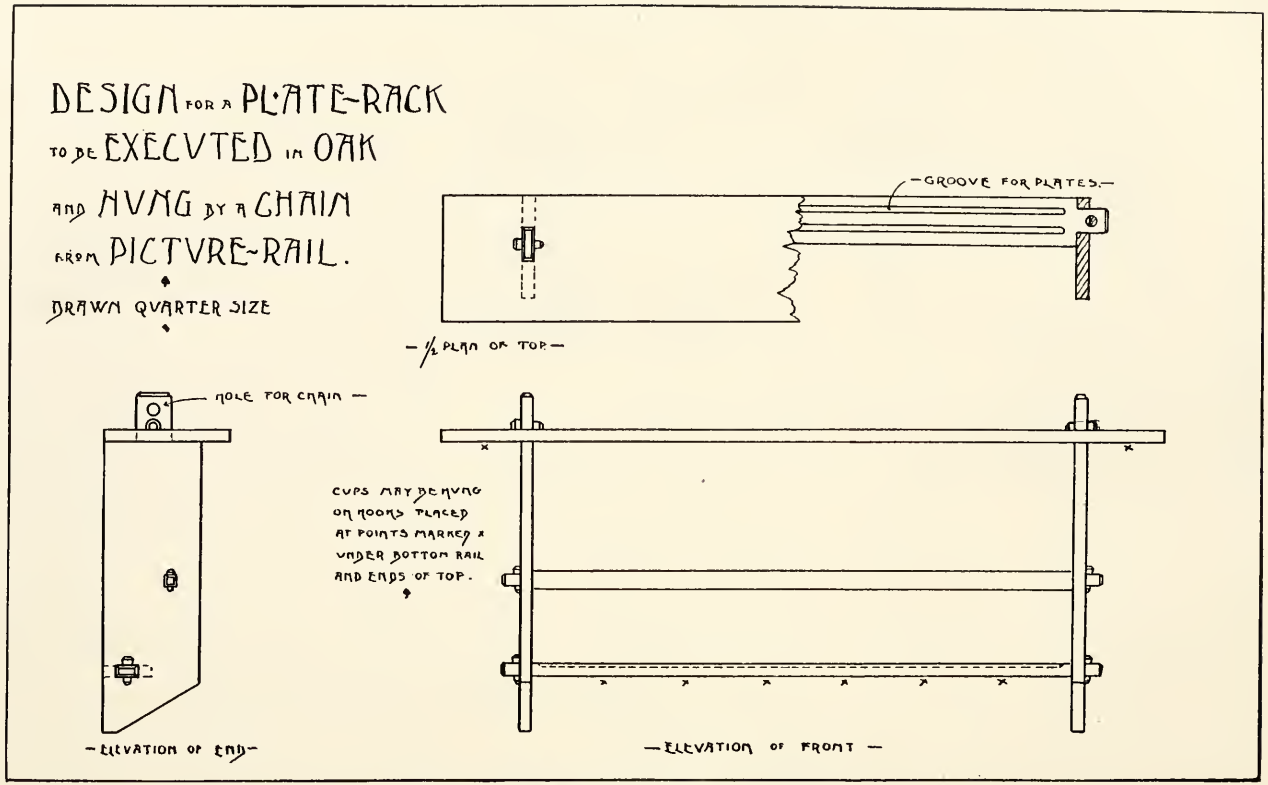


FIRST PRIZE (HARRIS W. MOORE)



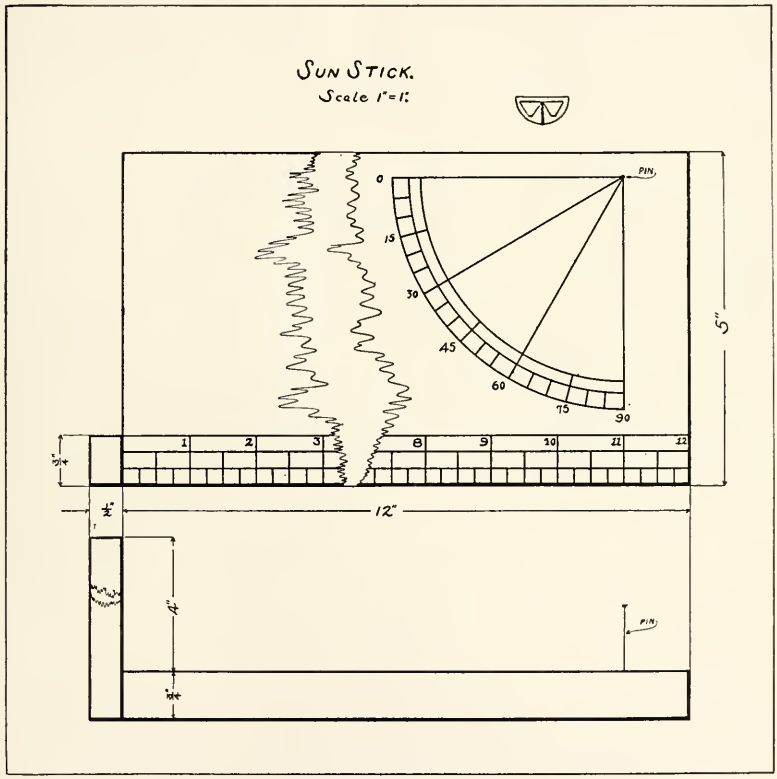
SECOND PRIZE (JAMES R. FORDEN)

supervisor of manual training, Indianapolis, and the editor. In accordance with the published statement each drawing in Class A was considered with reference to (*a*) suitability, (*b*) construction, (*c*) design, and (*d*) draftmanship. Each of these was given twenty-five points in marking. After the averages were made up from the estimates


DESIGN FOR A PLATE-RACK
TO BE EXECUTED IN OAK
AND HUNG BY A CHAIN
FROM PICTURE-RAIL.
DRAWN QUARTER SIZE
GROOVE FOR PLATES.
½ PLAN OF TOP
HOLE FOR CHAIN
CUPS MAY BE HUNG OR HOOKS PLACED AT POINTS MARKED x UNDER BOTTOM RAIL AND ENDS OF TOP.
ELEVATION OF END
ELEVATION OF FRONT

HONORABLE MENTION (ERNEST W. KENDALL)

it was found that the drawing receiving the highest mark was that of the waterwheel submitted by Harris W. Moore, teacher of manual training, Watertown, Mass., and he was therefore awarded the medal. The second prize of one year's subscription was awarded to the next highest, James R. Forden, of New York City, for his drawing of an oak seat. Honorable mention was given to a mantel clock by Geo. H. Babb, of the Walker Manual Training School, Portland, Me.; an umbrella stand by Frank P. Lane, of Springfield, Mass.; a plate rack by Ernest W. Kendall, of The Harvard School, Chicago, and a scoop by M. W. Hull, of Pueblo, Colo. There were so few drawings submitted in Classes B and C that the judges decided not to award any prizes in these classes.



A SUN STICK.

A sun stick, to be used in observing the angle of inclination of the sun's rays, is suggested as a model suitable for a first project in woodworking classes. It consists of a flat board, 5 inches wide by 12 inches long, having a scale graduated to ¼ inch divisions along one edge. At the zero end of the scale a shadow post is attached, ½ inch by ¾ inch, projecting 4 inches above the surface of the board and at right angles with it. Upon the flat surface of the board, and near one end, a quadrant is

described having its circumference graduated into arcs of five degrees each. At the center from which the arc is described a pin or wire brad is inserted perpendicularly to the plane surface.

To use the sun stick place it in a south window at noon, with the scale from 1 inch to 12 inches lying in a south-to-north line. The shadow post will then cast a shadow along the edge of the stick, the length of the shadow being read in inches and fourths. Then tip the sun stick up on one edge, the shadow post forming a support to keep it steady, with the 12-inch end toward the south. The pin will then cast a shadow across the graduated arc so that the angle may be read in degrees. The angle of the shadow below the horizontal, of course, is the angle of the sun's rays above the horizontal.

These readings are taken regularly as often as convenient and recorded. A comparison of the observations made at different seasons of the year will reveal certain facts in regard to the variation in altitude of the angle of inclination of the sun's rays in such a way as to be intelligible even to pupils in the intermediate grades. The apprehension of these facts creates a demand in the pupil's mind for an explanation.

The making of this model may come quite early in the grades or it may be used as a first model in the seventh or eighth grade, as circumstances may require. If used with older pupils tool exercises in considerable variety may be introduced—rip-sawing, cross-cutting, surface planing, edge planing, end planing, gauging, measuring, sandpapering, and nailing. As many of these exercises as desired may be omitted with younger pupils by providing the stock planed to size ready to be nailed together. The laying out of the graduated arc may involve as much or as little geometry as the preparation of the pupils will permit. WILLIAM T. BAWDEN.

The ornamental initials used in this number were designed by Edwin V. Lawrence of Bradley Institute. The bowl shown on page 167 was made at the School of Industrial Art at Keswick, England.

REVIEWS.

Forge Practice (Elementary). By John Lord Bacon. John Wiley & Sons. New York. 5×7½ inches; pp. 257; illustrated with 272 line drawings; $1.50.

Every conscientious teacher of shopwork feels that he wishes his students to get a little more out of his subject than the limited degree of skill attained in working out the actual exercise in the course. He always endeavors to get his students to connect their school shopwork with thoroughly practical methods and with the larger engineering projects in progress all over our country; to understand the underlying principles of the work, so as to know why certain steps are taken; and finally, to understand, as far as can be, not only the possibilities, but also the limitations, of the materials with which he is working.

In the book before us this side of the forge-shop work is very happily presented. The book is written in clear, brief terms, very much to the point, and profusely illustrated with very well made line drawings which almost tell the story at a glance.

It makes an excellent reference for any one interested in forge work, and especially for a manual-training teacher of that interesting branch. The actual examples, as such, seem more adapted to industrial or engineering schools, but the principles illustrated cannot be too strongly presented in any high-school course.

The opening chapter treats of the making and keeping of the forge fire, and gives a short, concise description of the common forge tools. Following this are chapters devoted to explanations of typical methods of shaping iron on the anvil, beginning with a clear exposition of the distinctive process of forging, viz., welding.

The subject of calculating stock is treated in a clear, definite way and will prove of great service to those in charge of actual forge work. I consider it one of the best presentations of the subject yet put into convenient form for ready reference.

Prefaced by a short description of hammer tools—showing how they differ from hand tools—the elementary operations of steam hammer work are illustrated by several well chosen examples, which show at a glance the successive steps in their forging.

There is a very readable chapter outlining in a simple way the manufacture of the three forge shop materials—wrought iron, soft steel and tool steel. This is pertinent at this time, when soft steel is being used to such a large extent.

In the chapter on tool steel a clear explanation is made regarding the terms used by the steel manufacturer and the steel user, often so conflicting to the uninitiated. The treatment of this useful material is gone over very carefully, giving principles to be borne in mind and various methods of hardening, tempering and annealing.

This chapter is followed by one devoted to the forging and tempering of the common shop tools, and represents good practice. A few miscellaneous jobs are grouped together, referring to such subjects as brazing, pipe bending, case hardening, etc., which are suggestive for a great variety of work with which a craftsman often comes in contact.

The closing chapter contains the following very useful tables: Circumferences and areas, tempering scheme, decimal equivalents, and weight of bar iron.

We have added to our personal copy one giving clearance and tap-drill sizes for standard machine screws and standard bolts.

WM. C. STIMPSON.

Pratt Institute, Brooklyn, N. Y.

Elementary Course in Mechanical Drawing. In two parts. Part I by Arthur W. Chase, B. S., instructor in machine drawing and design in the R. T. Crane Manual Training High School, Chicago, Ill. Published by Howard Speakman, Congress and Honore streets, Chicago, 1904. 7×9, oblong; pp. 189, with 97 figures; cloth, $1.50.

Those who are interested in the subject of mechanical drawing may have noted evidences of its growing value and importance both educationally and commercially, The magazines, trade and technical publications contain numerous advertisements of correspondence courses in this subject, while books upon it are coming at frequent intervals from the press.

One of the latest and best of these books is the one under review. The author rightly lays great emphasis upon a working knowledge of the fundamental principles of orthographic projection, and his method of instruction is admirably adapted to secure this end. All projection problems are given from data expressed in words, diagrams in some cases being used, but to a limited extent. This obliges the student to use and cultivate his "constructive imagination", a process he generally avoids and successfully when reliance can be placed upon plates from which he can copy in whole or in part, but which never confers real power.

Before taking up projection, the selection and use of instruments is considered, followed by some of the most useful geometrical constructions. These problems, like those in projection, are to be solved from data, and not only by strictly geometrical means, but also by the practical or draftsman's method.

An innovation, but a good one, is seen in the "Time Schedules" by means of which the proper amount of time the student should put on any portion of the course can easily be ascertained.

The directions throughout are clear and concise, yet comprehensive. The arrangement and style of type adopted form an excellent aid to an understanding of the text, factors of no slight importance in a work of this kind, especially where so few drawings are employed to convey ideas. JOHN H. MASON.

Stout Training Schools, Menomonie, Wis.

The Principles of Art Education. By Hugo Munsterberg. 4½×7; pp. 114; Prang Educational Co., New York, 1905. In this little volume the author has set himself the task of explaining the philosophical, æsthetical and psychological aspects of art education. Philosophically he declares the work of art to be "isolation"—the separating from its surroundings of that thing which the artist is to imbue with beauty. "To show the object as it really is," says the author; "to give us repose in the object; to make the object beautiful—are only different expressions of the same fact." How this isolation is to be accomplished on the side of content of the subject matter of the picture, and on the side of design or space arrangement, he then proceeds to illustrate.

Under the heading Psychology is discussed the question of how it happens that the lines and masses of a picture awake in our consciousness the ideas of feeling and energies, and why it is that certain combinations of such lines satisfy us while other combinations displease us.

This explanation, based on the experiments of the laboratory, will have a passing interest for the art teacher, but she will be disappointed if she seeks to find therein any direct aid in the development of pleasing pictures or patterns. Indeed the author in his conclusion warns his readers of the danger of overestimating the practical value of the psychological explanation of art, and urges upon them the teaching of the æsthetics of drawing—"noble space-divisions and curves, light values and colors, the explanation of contents and meanings."

As a whole this treatise is interesting but not very satisfying. There is evidenced in it a disposition to speak of the child as one who gains his knowledge in adult fashion, and who is prepared throughout his early years to accept and profit by æsthetic training, based on adult standards. That his sense of beauty appears late, and that early attempts at its cultivation profit him little are, however, facts demonstrable in any primary classroom. The principles of art education that will aid the elementary teacher are those that show her the child as a constantly changing organism, and that define for her with some precision the possibilities, the methods and the limitations of his training throughout his early years. Picture-making, as such—the ultimate direction in the treatise under discussion—has already been weighed in practice and found wanting. —*H.*

Neuer Lehrgang fuer Schnitzen. Moderne Vorlagen fuer Furchen,–Flach–und Reliefschnitt. By Max Enderlin of the Boys's Training School at Mannheim. Frankenstein & Wagner, Leipzig. 24 plates each 16x11¾ inches, printed in two colors with descriptive text on the inside of the paper cover; price 4.50 marks. This book of designs for wood-carving is a product of the recent movement in Germany to unite art and manual training. Each model is a useful object decorated with carving. The series begins with carving in outline, then flat carving, and finally work in relief, involving considerable modeling. Throughout the series most of the decorative forms employed are conventionalized leaves and flowers. With few exceptions the models are good in construction and design. Though some of them would hardly meet our American needs they are all well worth studying by American teachers who believe that carving is the most appropriate form of decoration for wood and are looking for suggestions. —*B.*

Suggestions in Hand Work. By Wilhelmina Seegmiller. Published by Atkinson, Mentzer and Grover, Chicago, 1904; 7x4¼ inches; pp. 80, illustrated with halftones and line cuts; heavy paper covers.

This attractive little volume describes several kinds of handwork which have recently been developed in the public schools of Indianapolis. These include weaving paper, illuminating educational texts and work in tilo matting. This matting is a soft and pliable material, of checker weave, made in Japan from shavings of the fir tree. About a year ago some of this matting was purchased for experimental work in the third and fourth grades and it has proven to be very satisfactory. Objects made of this material and raffia have a real use in the home and at school, as napkin ring, card case, music roll, needle book, baskets, cuff box, glove box, portfolio, cushion and the like, and its possibilities for artistic treatment are manifold. —*B.*

Educational Manual Training—No. 1, Paper Folding; No. 2, Cardboard Construction; No. 3, Elementary Knifework; No. 4, Advanced Knifework. By William C. A. Hammel. Published by B. F. Johnson Publishing Company, Richmond, Va.; 7x10 in.; pp. 48 in each part; illustrated with reproductions of photographs and working drawings; paper covers, price 25 cents each.

Each of these books contains a series of models worked out in detail. The steps in the process of making each model are given seriatin. While most of the models are what may be termed standard forms, some of them are new.

To the teacher who knows neither geometry nor the technical processes involved in knifework and cardboard construction these books will have their greatest value. To the teacher who knows these fundamentals they are suggestive though of less value. The evident purpose of the author was to present a logical course in each of the subjects treated rather than fundamental technical processes followed by suggestive designs, principles of design and possible courses. The danger in such books is that they will be slavishly followed; their excellence is in their definiteness, clearness, and the practicability of the work they set forth under the conditions of the ordinary schoolroom. —*B.*

The following have been received:

Manual of Cardboard Construction. By Charles A. Kunou. Printed for the Board of Education, Los Angeles. A paper-covered book of 76 pages containing the series of models used in the third and fourth grades in the Los Angeles public schools.

Proceedings of the Department of Manual Training of the National Educational Association Convention, 1904. This can be obtained from Dr. Irwin Shepard, Sec., Winona, Minn. Price, 10 cents.

Report of Milwaukee Meeting of Western Drawing Teacher's Association. Mary E. Chamberlain, Sec., Saginaw, Mich. Price, 50 cents.

Biennial Report of State Superintendent of Public Instructions of Indiana, 1904. By Fassett H. Catton. Contains an illustrated chapter on "Articulation of Head, Heart and Hand Training."

Ethical Culture School. General outline of Course of Study, 1904. Frank A. Manny, principal Central Park West and 63d Street, New York City. This contains a suggestive outline of manual training and art by grades.

Manual Training. By L. A. Hatch, principal of the Training School, State Normal School, DeKalb, Ill. A leaflet answering objections raised to work described by Mr. Hatch in two articles published some time ago in *The Northern Illinois.* (See also MANUAL TRAINING MAGAZINE, Vol. III, Page 201.)

National Conference on Secondary Education and Its Problems. Held at Northwestern University, in October, 1903. Stenographic report of proceedings edited by V. K. Froula. Published by the University, Evanston, Ill., 1904. This a 240-page report of the celebration in honor of Dr. Herbert Franklin Fish, who for thirty years was principal of the Northwestern University Academy.

Report of Industrial Exhibits of the Philippines Schools at the Louisiana Purchase Exposition. By A. R. Hager, in charge of Educational Exhibit. A 51-page bulletin.

Report of Superintendent of Indian Schools, 1904. By Estelle Reel, superintendent. Washington, D. C. Pp. 52+7 full-page illustrations, mostly of pupils at work.

Report of Commissioner of Education for Porto Rico, 1903. By Samuel M. Lindsay. Pp. 270+27 full-page illustrations. Most of the illustrations are reproductions of photographs of schools buildings. By looking at these one gets a new idea of school conditions on the island. The report contains many chapters, not the least interesting of which is the one on industrial work by Arthur D. Dean of Springfield, Mass., who went to Porto Rico in 1902 as an expert agent of the Department of Education.

MANUAL TRAINING MAGAZINE

JULY, 1905

SOME PHASES OF JAPANESE HANDICRAFT.[1]

CHARLES R. RICHARDS.

WHEN one turns the Malay peninsula from the westward and sails north, he comes to a people whose crafts and art in general are in striking contrast with those of Central and Western Asia. As soon as people of the Chinese race are reached, one finds in all handicraft a union of accuracy and technical skill with fertility and taste in design. It is true that the great periods of Chinese art are in the past, but even to-day the skill of the workers in wood and porcelain and embroidery is a thing at which to marvel.

It is Japan, however, that is the true home of the artist craftsman, and where exists to-day the ideal union between perfect workmanship and spontaneous and exquisite design. The present production of industrial art in Japan divides sharply into two classes: that intended for the foreign market and that destined for home consumption. The former does not represent Japanese art either in design or in technique. It represents what the Japanese merchants have found to be the taste of the foreign popular demand. Such productions have a quality we call Japanese, but whether porcelain, cloisonné, bronze or lacquer they lack the exquisite simplicity of design, the sobriety and beauty of color, and oftentimes the fineness of workmanship that characterize the things made for the Japanese home.

One must penetrate quite beyond the curio shops and large "art stores" of the old treaty ports and search out the workers in the quiet side streets to gain a conception of true Japanese craftsmanship.

[1] Copyright, 1905, Charles R. Richards.

One noteworthy contrast between the production of the foreign market goods and of those for native use is that the first is a matter of large quantities and is performed in factories where the principle of division of labor has been introduced, whereas in the latter case most of the wares are made in small shops very commonly connected with the dwelling where the master workman alone or with a few assistants constitutes the producing unit.

The present condition of this purely native work shows a striking contrast with the state of things in India. Before contact with western civilization the conditions under which the finest work was produced were very much the same in the two countries. The best of the Japanese craftsmen were attached to the households of the daimio, or prince just as their Indian brothers had a place in the establishments of the rajahs. Both were sheltered from the pressure of the outside world and left free to work out their conceptions of beauty and of excellence. Under the changed conditions of to-day the work of one has sadly degenerated, but the spirit of the other is still triumphant.

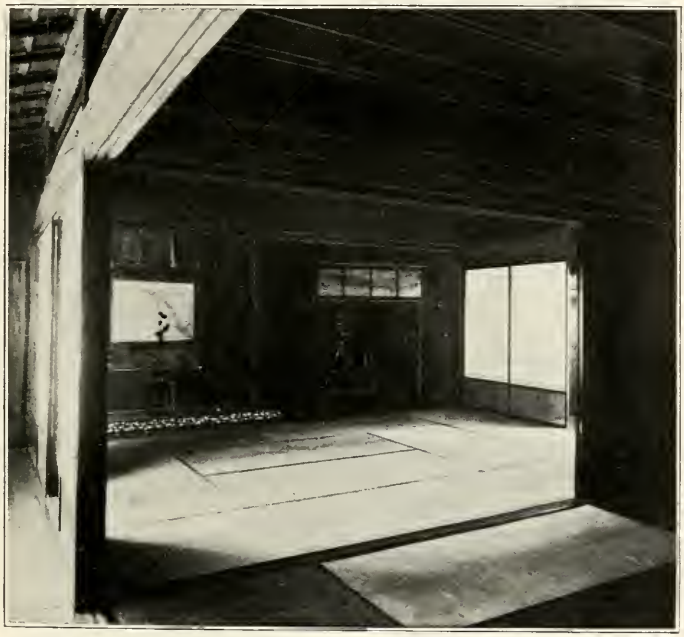
Doubtless quantity production and the factory system will in time become the economic order by which the general industrial needs of Japan are supplied, and when this time comes the critical stage of Japanese art will be at hand. For when this condition is reached the loss of identity in planner and worker will have come about and the new problem of the designer and the factory, the thinker on one side and the army of doers on the other, must be faced as in the west.

Whether Japan will meet this problem with more success than has the occidental world remains to be seen, but that the native art-craftsman has an assured place for many years would seem to be beyond question. For in Japan, in spite of certain movements to the contrary, the standards of art for the people at large still remain thoroughly indigenous, and the wealthy and aristocratic class still find their highest delight and satisfaction in the exquisite outflow of the national genius.

This, together with the general spread of artistic feeling, which keeps pure and fresh the quality of design, would seem to promise that Japanese art-handicraft will continue even amid a changing order of national existence to delight the world for many years to come.

Out of the many suggestions that Japanese art has to offer to the western world it seems to the writer that there are two of great significance to all teachers of the crafts, viz: simplicity of design, and artistic consideration of the common, every-day things. Nothing illustrates

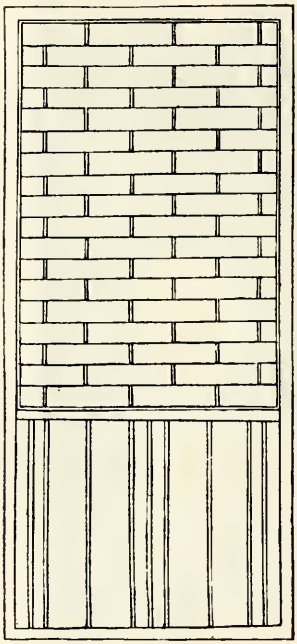
these ideas better than the character of a Japanese room. Notwithstanding the introduction of many features of western life in Japan, such as the railway, post, telegraph and newspaper, the home life of the people has remained practically unaffected, and the construction of the native house and its treatment is precisely as it has been for centuries.



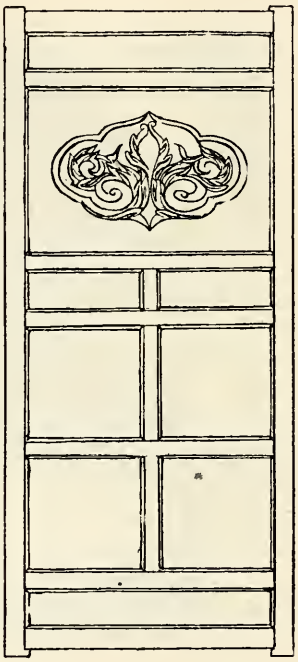
ROOM IN AN INN.

To the western eye a Japanese room at first seems bare and empty' but one soon comes to recognize in it a beauty of simplicity, a restful ness that is never present in the crowded rooms of our own houses. Without furniture in our sense of the term, a Japanese room depends for its effect upon the walls, floor and ceiling. The floor is covered with straw mats of a uniform size, three feet by six feet, and something over two inches thick, which fit closely together, and which give as a whole a certain suggestion of pattern and a cool neutral color effect. Shoes are never worn inside of the house and the mats are kept scrupulously clean. Their surfaces indeed correspond more to the tops of our tables and seats of our chairs than to the ordinary western floor.

The walls of such a room seem to us extremely frail. Their main structural feature consists of wooden posts about five inches square placed in the corners and at certain other points, which support the roof or the floor above. Between these posts in the outside wall and in those which divide from the other rooms slide light wooden screens. Those



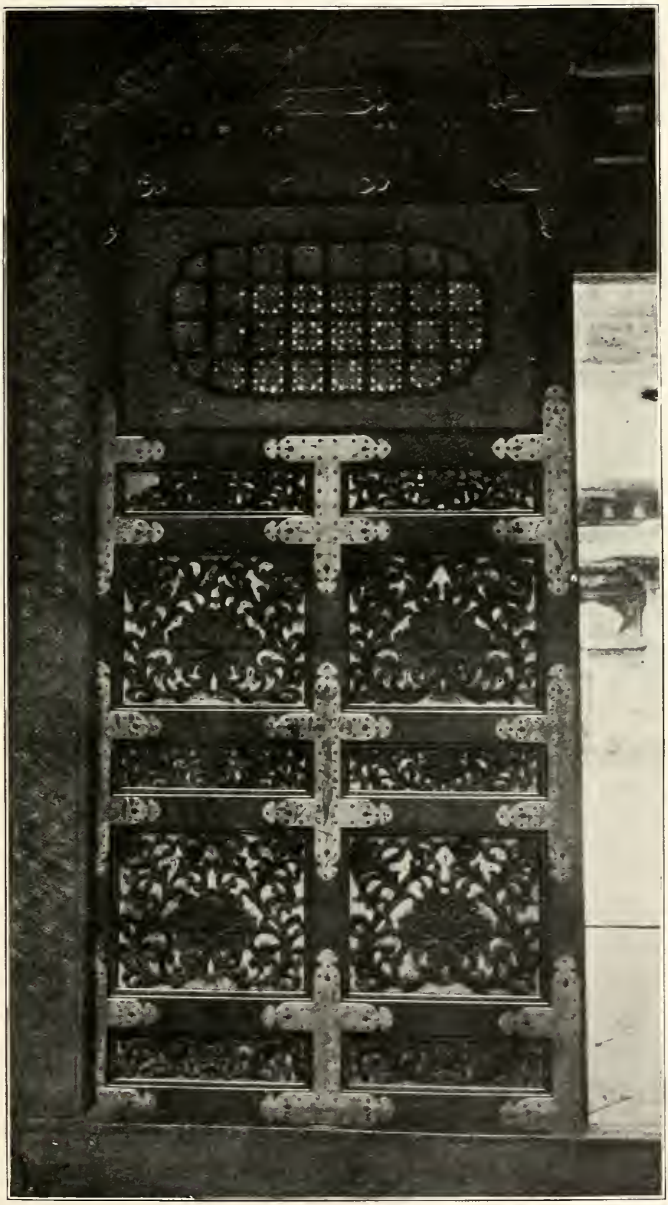
SHOJI.



OUTER DOOR OF HOUSE.

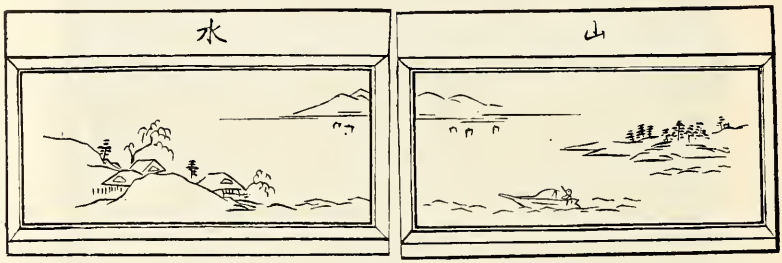
on the outside wall (shoji) are filled with a delicate lattice of wood covered with thin paper, while those which form the partitions between the rooms (fusuma) consist of frames covered with thicker paper upon which is commonly a printed or painted decoration in low tones. The lattice work in the ordinary shoji is arranged in equal rectangular spaces, but the designs in many cases are more elaborate, and present a great variety of extremely interesting line arrangements.

In this connection, the outer doors of the house might be mentioned. These doors like our own are formed of a frame and enclosed panel spaces, but their treatment is freer and more varied than with us. The doors of the palace and temple gateways are often splendid examples of



DOOR OF TEMPLE NIKKO.

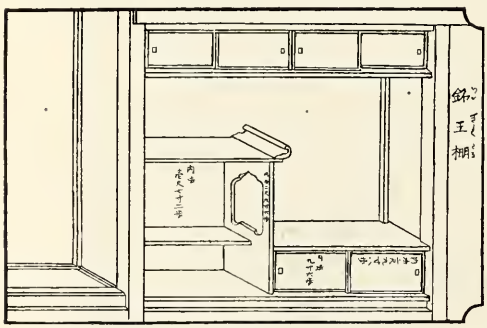
design. Much of their charm lies in the color and carving with which they are enriched, but their fundamental quality is the beauty and variety of their space divisions. Beautiful indeed are some of these grand doors before the tombs of the Shoguns at Nikko and at Shiba Park.



RAMMA.

Above the sliding screens and forming a part of the fixed partition are long panels of thin wood (ramma) which lend a charming feature to the room through a very simple decorative treatment. This consists in perforating the wood according to some design, and so developing a composition of pure lines or the simplest suggestion of a landscape or a flight of birds.

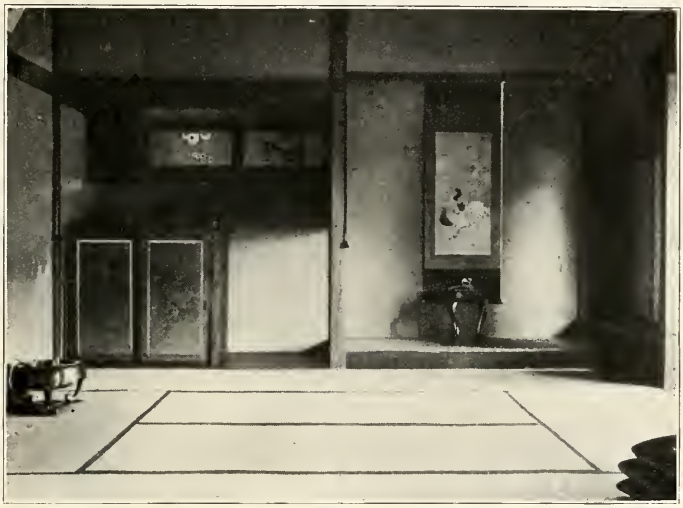
Overhead is the ceiling of boards selected for their beauty of grain and color. No people in the world appreciate the natural beauties of wood and employ them to such advantage as the Japanese. Neither paint, nor varnish, nor stain are used. At a few points, such as the frames of the sliding panels, a coating of black lacquer may be used, but in general the texture, color and grain markings of the natural wood are relied upon to produce the decorative effect.



CUPBOARD AT SIDE OF TOKONOMA.

In the erection of a house the selection of wood for the posts, ceilings and ramma is a matter to which the greatest care is given, and at the lumber dealers in any large town may be seen a collection of posts gathered for beauty of grain and color from all parts of the empire, and often from

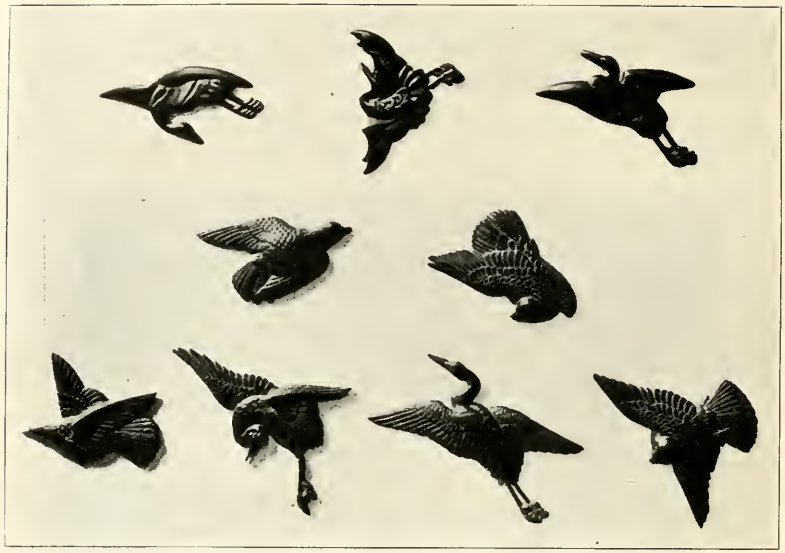
distant places like China, the Malay States and the Philippines. In order to secure harmony of color and grain effects for the ceiling, boards from the same log are generally used, and at the lumber yards the boards for this purpose, often the fine grained cypress (hinoki) or the rich gray or brown cedar (sugi), are kept together in bundles just as they were sawed from the log.



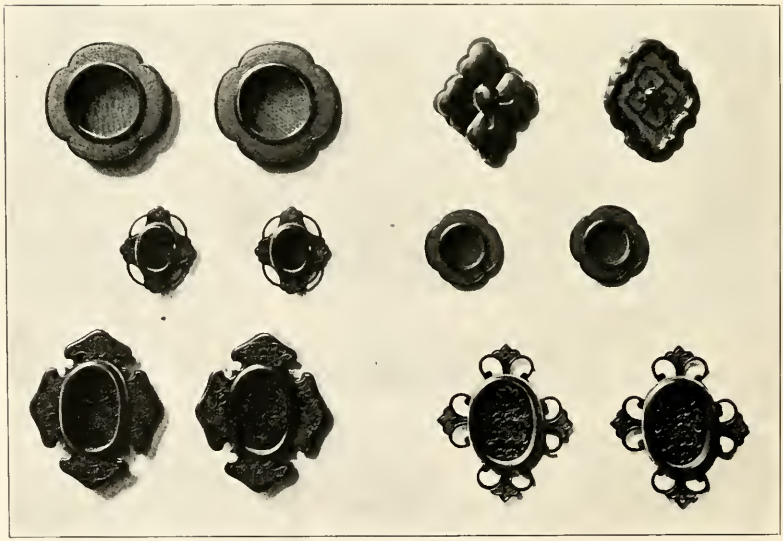
END OF ROOM SHOWING TOKONOMA.

The only place in a Japanese room where any decorative effect is attempted outside of the structural elements, and this only in the guest room or rooms of an inn, is in the niche, or tokonoma, at one side. Here a kakemono may be hung or a flower arrangement, a bronze or other ornament disposed. Whatever the particular effect may be, it remains for but a brief period and then gives way to another specimen of the household treasures.

At one side of the tokonoma is commonly an arrangment of shelves and cupboards for holding clothing and other articles of personal apparel. The arrangement of the various shelves and cupboards is a matter of infinite variety and often presents delightful and interesting examples of space-and-line composition. So indeed it is with the effect of the entire room. Freed from eye arresting masses of furniture and imposed decoration, a purely structural effect is presented, which gains its beauty from fine space arrangement and the appropriate treatment of its members.

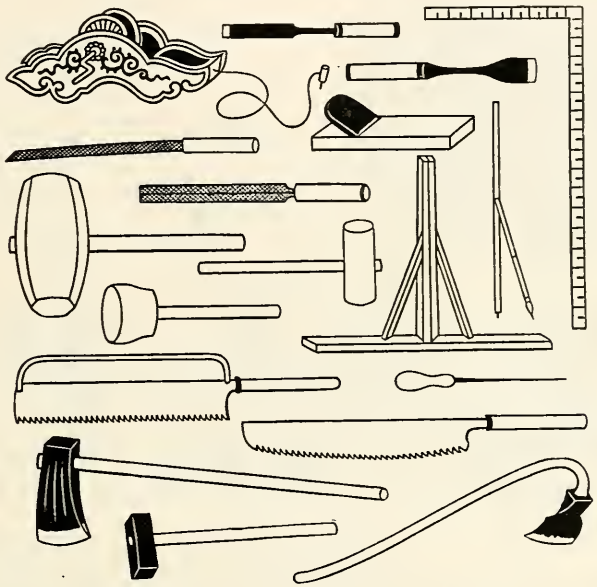


METAL COVER PLATES.



METAL PULLS—HIKITE.

Every Japanese house is in addition a lesson in honesty and excellence of workmanship and in attention to small details. No nails or screws are employed in the construction, but all timbers and frames are jointed together. The delicate lattice work of the shoji is a marvel of accurate fitting and exquisite finish. Even the shelves and uprights of



TOOLS OF THE JAPANESE CARPENTER.

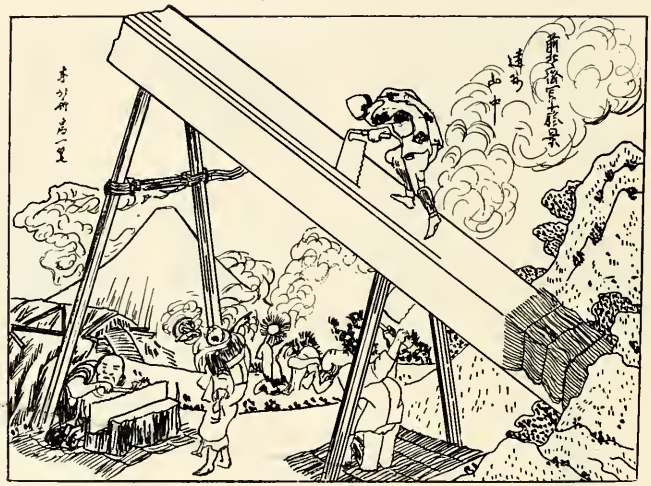
the cupboard niche are dovetailed together, and in examining the concealed structure one gains the impression that a Japanese takes, if it were possible, more pains upon what is out of sight than with that which is in view.

Where a joint occurs in the lintel, which runs above the screens, a dainty bit of cast or beaten metal, often in the form of a bird in flight is used to cover the spot. The little pulls, or hikite, used on the fusuma and on the cupboard slides also merit attention. These are generally of copper with a polished black or rich brown surface, and are often perfect gems of delicate line design.

The tools of the Japanese carpenter are in general character not unlike those of his western colleague, but are used in quite a different manner. The saws as well as the planes are operated on the pull stroke and are much lighter than similar tools with us. The apparatus in the upper left hand corner of the cut, *sumi-tsubo*, corresponds to our carpenter's chalk

line, but in this case the line which is wound on a reel passes through a pocket containing some cotton wool dampened with Chinese ink, so that a black instead of a white line is snapped on the wood.

The saw that is used for cutting boards from the log is an instrument with little resemblance to that employed elsewhere for this purpose. It



SAWING BOARDS FROM THE LOG, FROM PRINT BY HOKUSAI.

has a short wide blade, turned sharply at right angles to its length and a handle which is grasped by both hands. The drawing by Hokusai shows very clearly the manner of its use.

Mr. Fenollosa has pointed out that [1] the arts of any country can not be thoroughly analyzed simply as a matter of materials or processes, but that the contemporaneous spirit of design which plays through all materials should be considered as a key to their understanding. With this point of view the writer is in full sympathy, but, as he has neither the power of so interpreting the craft situation in Japan or space to attempt any comprehensive description of its practices, he must be content with presenting a few phases of the situation of perhaps special interest to the readers of this magazine.

The Japanese are unquestionably master magicians in the field of artistic metalworking. Whether it be the working of beaten or of cast metal, the production of colored patinas or the embossing, encrusting or

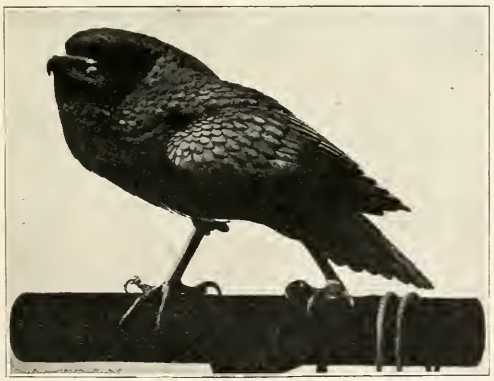
[1] A history of Ukio-ye.

inlaying of surfaces their skill is such as to make the rest of the world seem almost like amateurs. In beaten metal they work from sheet or ingot, and their ability to develop the most difficult of forms seems to have no limit. The working of copper has long been practiced, but the production of silver table ware is an affair of recent years which has arisen to meet the foreign demand, and which reflects the character of that demand in the florid and overcrowded nature of the designs employed and in the high relief of the embossed parts.

INCENSE BURNER OF BEATEN IRON.

Beating cold sheet iron into complicated hollow forms is a matter quite outside of western experience, yet there are several men in Japan who produce the most delicate incense burners or vases with surface relief ornament from this metal. Those who saw the wonderful lion in the Fine Arts Building at St. Louis, made by the master in this field, Yamada Chosaburo, realize to what heights this art has been carried.

It is, however, perhaps in bronze casting that the greatest triumphs of the Japanese metalworker are reached. The use of bronze for important artistic works extends back some twelve centuries, and the splendid lanterns before the tombs of the Shoguns, the great bells of Kioto and Nara, and the colossal statutes of Buddha, culminating in the wonderful figure at Kamakura, stand among the highest achievements of any people in this field.



HAWK IN BRONZE.

The method universally employed for such work is the waste wax process. This process was described in its elements in the article on the "Metal Crafts of India",[1] but while in India art casting is confined

[1] Manual Training Magazine, January, 1905.

to simple forms of domestic vessels or conventional figures of the gods, in Japan it comprehends the most intricate and elaborate designs. One great merit of the waste wax process lies in the fact that the wax receives the individual touch of the artist, and this being transmitted to the metal each casting is virtually an autograph record of the artist's design.

CAST IRON TEA-POT.

Although wonderful achievements, both from an artistic and technical point of view, are represented by the more elaborate bronze castings, it is true that by far the larger part of the articles made for Japanese use from this metal are very simple in design and rely for their effect upon dignity and charm of outline, and their rich and varied patinas.

It may be worth noting that the mixtures commonly used for Japanese bronzes contain a considerable amount of lead. This element renders the alloy more fusible and assists the formation of desirable patinas. An average mixture recommended by Gowland[1] for castings of moderate size is copper 88 parts, tin 7, lead 5.

Before leaving the subject of casting, a word should be said about the common cast-iron tea-kettles that are everywhere in use. These kettles present an almost endless variety of form and surface treatment and hold a high place among the attractive yet simple utensils of the Japanese household. Such kettles are not cast by the waste wax process, but in sand moulds made from a solid pattern.

One of the most thoroughly characteristic and charming effects of Japanese metalworking is that gained by interlaying various metals and

[1] The Art of Casting Bronze in Japan.

alloys in the surface of bronze. Such inlays may be flat, or flush with the surface (hira-zogan), or raised above it (taka-zogan). The perfectness and thoroughness with which such inlays are made represent one of the most exquisite features of Japanese workmanship, while the great variety of effects and the freedom of treatment afford one of the most delightful aspects of native design.

The imposed metals are not merely hammered into a shallow depression, as is the case in Turkish and Indian work, but are fitted into a relatively deep channel, the sides of which are undercut so as to produce a dovetail effect. Into this recess the inlay is most accurately fitted and is then spread by hammering so as to securely and perfectly fill the space.

ENCRUSTED BRONZE VASE (TAKAZOGAN.)

There would seem to be no limit to the number of colors at the command of the artist in this field. He not only makes use of gold, silver and copper, but by mixture adds a number of alloys and gradations of alloys. Principal among these are shibuichi and shakudo, the first being an alloy of silver and bronze, and the second copper, to which two to five per cent. of gold has been added. By chemical treatment this latter yields a fine black color which takes a lustrous polish, while the silver alloy gives varying shades of gray according to the amount of silver used.

These various metals and alloys are combined and contrasted in most dextrous fashion to produce sometimes bold and striking results, and sometimes the most minute and delicate effects. A half dozen different metals are often found on an inlaid netsuke in the space of one-sixteenth of a square inch, but always in a harmony and balance of color that is enchanting.

Another metal effect that is peculiarly Japanese and one that excites constant admiration is that produced by patinas. The simplest and cheapest bit of copper or bronze is not too cheap but what it is enriched

by some fine surface color, whether a rich red, a warm brown or a cool green.

The writer purchased a small copper tea-pot in a town on the northwest coast for the sum of ten cents. This little pot is enameled inside and underneath the cover. It has a spout and a wooden handle and on its outer surface is a fine red and black patina which transforms it at once from a commonplace affair to a joy forever.

COMMON GLAZED POTTERY.

The process of producing patinas is one concerning which it is less easy to obtain exact knowledge than any other Japanese craft process. The wonderful colors on old Chinese and Japanese bronzes were produced by the action of moisture in the air or in the soil acting through a long period of time, but at the present time practically all patinas are developed by the wet or pickling process. This process necessitates to begin with a very careful polishing of the surface by rubbing down with soft charcoal. The piece is then immersed in a pickling solution, which may be cold or heated, for varying lengths of time. It is then heated over a charcoal fire and frequently wetted with the pickling liquid. These two operations are repeated again and again until the desired color is obtained. The patience, care and time required for such a process are very great, so great as to seem practicable only to an Oriental. With our western ways we are fain to be content with a less perfect result obtained by some speedier method.

The variety and beauty of colors obtained seem to depend rather on the special manner in which the piece is subjected to the action of the solution and the subsequent treatment than upon a great variety of pick

ling mixtures. The main constituents of the mixture most commonly used appear to be sulphate of copper, sulphate of iron and acetate of copper dissolved in plum vinegar.

Japan is pre-eminently the land of the potter. Nowhere else does individuality of expression enter in such degree into the common domestic pottery of the people; nowhere else is such simplicity and charm

POTTER AT WORK PARING DOWN.

of treatment combined, and nowhere else is such variety of glaze and color and decoration displayed.

But here again a sharp distinction should be drawn between the wares destined for export and those intended for native use. The foreign market goods are made in quantities in large establishments and exhibit strong colors and florid designs as in the gaudy red and gold of Kaga, the many-colored and kaleidoscopic patterns of Arita, and the European imitations of Seto. It is in the small shop of the master and his few assistants that the quiet-toned bowls and cups of the Japanese household are produced.

The history of Japanese pottery is mainly an account of the work of individual potters, each contributing some new combination of clay or glaze or enamel color, or of decorative treatment, and even to-day one often finds the master of a most modest establishment pointing with

pride to some particular artistic or technical effect as the specialty of his house.

The art potters are in a sense the aristocrats among the craftsmen, not so much in wealth or position but rather in devotion to their art and aloofness from the influence of mere commercialism. They are life-long students of their craft, constantly experimenting and constantly

KILN FOR FIRST FIRING OF PORCELAIN.

learning in the school of experience, and so large is the field and so rich in traditions that they seldom reach a position of acknowledged reputation before they are advanced in years. The writer looks back to his contact with some of the noted potters of Kioto as among the most interesting and enjoyable experiences of his life. Courteous, simple, dignified, working quietly and devotedly in their pleasant neat rooms, these men gave one a sense of the meaning of art in striking and significant contrast with the attitude of our western world.

Porcelain is fast becoming the sole ceramic product of Japan. The old pottery of earthenware with its opaque glazes and simple forms is steadily being replaced by the stronger and lighter ware. This tendency undoubtedly makes for better and more serviceable table ware, but it also means the loss of much that was charming and naive in the art and much that was associated with the great names and achievements of the past.

Japanese methods of manufacture are still extremely simple. Of late years the western methods of pressing and of casting in moulds have been introduced and are considerably used in the manufacture of wares for export, but a majority of the common forms, whether of earthenware or porcelain, are still thrown upon the wheel. In the case of porcelain the piece is at first fashioned much thicker than is ultimately intended, and after being dried is turned down to the requisite thinness. The wheel is an extremely simple affair, consisting generally of a single disc of stone or wood about 18 inches in diameter, placed nearly level with the floor, and rotated by the fingers of the operator, who kneels before it.

BUILDING UP A TEA-POT.

Printing small designs in color by means of wooden stamps has long been practiced, but now much printing is done on the cheaper wares for export by the western method of transfer paper. Low modeling in relief by slip painting is often employed, but the finest work of this kind is done by carving away the body of the piece before it is fired.

One of the most interesting processes of pottery-making is that represented by the so-called Banko ware. This ware, which is mainly confined to tea-pots, was formerly quite common, but is now made by only a few persons in one locality. The pieces are not thrown on the wheel, but are built up by hand. A flat disc of clay is used for the bottom and is slightly turned up around the edge by working between the thumb and forefinger. On top of this flat ribbons of clay about two inches wide are added by lapping the thinned edges and are worked into shape until the form is complete. Some of these delicate little pots are very thin, and the skill displayed in joining the successive pieces, and particularly in modeling the spout and handle, is very remarkable. The process is a refinement of the American Indian method of building by coiling, but the result, like everything Japanese, represents a delicacy of taste and skill of hand found only among these wonderful craftsmen.

APPLIED DESIGN, II.[1]

JAMES PARTON HANEY.

THE previous article of this series considered the effect of dividing a space into masses which related themselves rhythmically to the inclosing boundaries of the space. In many designs, however, masses appear which are not formed by lines which come into contact with the inclosing boundaries. A simple design of this type appears in Plate XI (a), where a space is seen divided by the introduction of a small mass within it. The eye in traveling along the line which bounds this mass tends to leave it at each corner and pass on the nearby border. Having examined the proportions of the mass or spot, it instinctively notes the proportions of the spaces formed by the outlines of the spot and the inclosing lines of the space.

No mass can thus be introduced into a space without creating other masses more or less distinct, yet related to one another. The simplest of applied designs are of the character noted in (a). Sometimes the spot may appear as a bit of printing or an ornamental unit. In

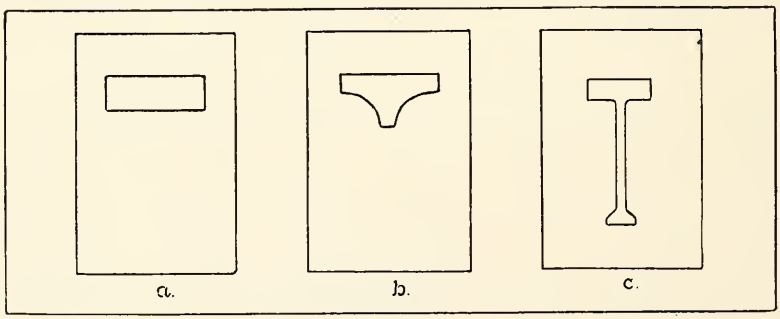


PLATE XI.

familiar language such spot is spoken of as "the design", but it is to be understood that in itself it has no claim to the title. The design is the relation maintained by all the masses which have been created by the introduction of the spot within the space. The union of elements

[1] Copyright, 1905, James P. Haney. For first article of this series see MANUAL TRAINING MAGAZINE, April, 1905.

forms the design; the small mass or spot may more properly be described as the "decorating unit". Plate XI, (a), illustrates a unit of the very simplest type and one which creates very simple subordinate masses, (b) offers a slightly elaborated form, and (c) one in which the masses are multiplied and varied.

It will be noted that in all these examples the main lines of the decorating spots parallel the main lines of the inclosing form. This serves to preserve the structural nature of the design. In general all main movements in a design should rise from structure. This consideration must constantly be kept in mind in planning decorative elements for any space.

INTEREST.

The introduction of a spot or mass within a space acts to give additional interest to that part of the space in which it appears. Every spot forms a center of interest which has more or less attraction for the eye, depending upon its size, the nature of elements which compose it and upon the number and variety of the masses which it creates in the space in which it is placed.

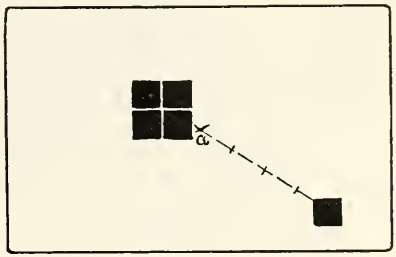


FIG. I.

Every additional line introduced in a design adds to the movement of the pattern. It is one more element which the eye instinctively follows. Each spot with its boundary lines, therefore forms a center of movement from which the eye departs along the lines of suggested rhythms, and to which it returns after such excursion.

The principal center of interest is that which, by virtue of its size or the nature of the movements it controls, appears of greatest importance. To it the eye turns first. Unity requires that a design should have but one such center, though subordinate centers may be developed in manner to be later shown. Multiple centers are to be introduced with care, as they tend to distract attention, to weaken structure and to destroy repose.

BALANCE OF INTERESTS.

A theory has been advanced that repose is secured by balancing the decorating units of a design on the center of an enclosing space, in manner similar to the balancing of physical weights upon the fulcrum of a beam. Such balance is seen in Fig. 1, where one spot is four times the

area of another and balances the latter at one-fourth of its distance from the center of the enclosing space. The truth of this hypothesis is left by its advocates to rest upon the assertion that the eye demands this balance as essential, and that it determines the center of a design to be at a point (a) which would represent the fulcrum upon which, in the language of physics, the beam would turn. In practice, however, a design so planned will often be rejected by the eye as lacking in harmony—that is, lacking in repose.

FIG. 2

In behalf of this theory of physical balance there is often adduced the practice of the Japanese, in whose work may be found examples which serve to illustrate it. On the other hand there are hundreds of designs from the brushes of Oriental workers which make no pretensions to a physical balance and yet are highly acceptable to the eye. (Fig. 2.)

No rigid law is to be formulated, governing the balance of masses introduced as decorative units, for such law would ignore the secondary masses which the decorating spots create. In default of such law, the designer must familiarize himself with that which makes for interest, with a view to determining how different interests may be made to offset or balance one another in the development of repose.

Referring to Fig. 3, we note that the inclosing form is divided by the spot into four related masses which, with the spot itself, constitute the

design. All of these masses the eye examines, and compares. the support of the inclosing form given by the long line at the unit, and feels the structural relation thus emphasized. It exa ... smaller masses (1, 2, 3) and compares them with the spot itself and the mass (4.) If it finds agreeable variety in these spaces it approves the pattern. If, on the other hand there is a lack of variety, as in Plate XII, (a), where the subordinate masses (1, 2, 3) are of one size, or if the space above be too great and the unit represented as slipping down (b), or too small and crowded at the sides (c), the eye is offended. The design in each of the latter cases has its center of interest, but the center is not pleasing in its relations, and the design as a whole lacks repose.

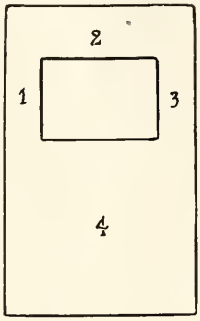


FIG. 3

The space Fig. 3 is of a nature which makes it possible for the eye to grasp easily all the masses formed by the decorating spot. When this is the case it is satisfied to accept a single center of interest. The greater mass below the spot has not been so large as to attract undue attention to itself. If, however, the decorating unit is of the size and nature shown in Plate XII (d), the eye finds the mass below empty and displeasing, and seeks in it some further center of interest.

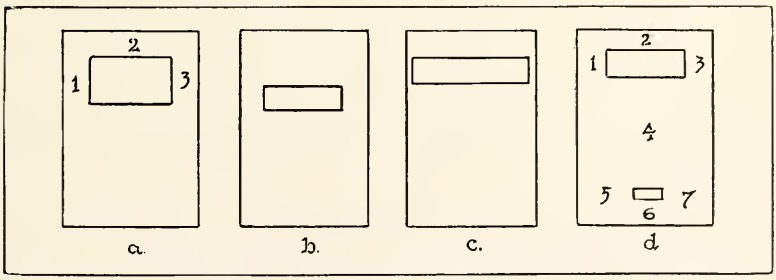


PLATE XII.

A second spot may, therefore, with propriety be introduced, giving an additional center or point of departure. The same care must be taken to secure agreeable relations in devising the masses (5, 6, 7) which this spot creates, as in planning those of the spot above. The size of the second spot will depend upon the nature or use for which the design is planned. If the pattern is to be an upright one, the lower mass should

not be as large as the upper, else the eye will not feel the stronger interest above and the vertical nature of the design will not be preserved. This fact is to be borne in mind in decorating structures which exert a supporting or an upward pushing force. (See bracket base Plate XIII, "a") If, on the contrary, stasis or weight is to be secured, the mass below should be made heavy that the eye may feel the downward pressure and the stability of the form be increased. (See tabouret leg, c).

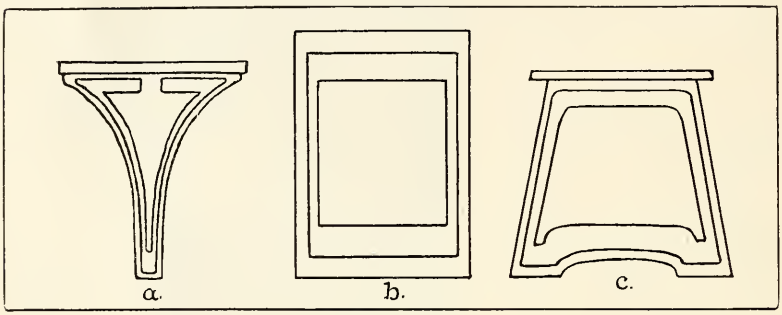


PLATE XIII.

Designs which are to be seen horizontally without emphasis upon any one part over another should have this character expressed by equality of interest in the parts of the pattern, as in (b), which might serve as the mass arrangement for a box top or rug.

RHYTHM OF MASSES.

Attention has already been called to the fact that on the introduction of a mass into a space, the eye tends to leave the outline of the mass at each angle and continue in the direction indicated by the line on which it has been traveling.

If more than one mass be introduced into the space, the additional lines increase the movement of the design and give to the eye additional material round which to travel. If the movement is to be a grateful one, that is, if the design is to be harmonious, rhythms must be easily established between masses that are in any close relationship.

Thus in Plate XIV (a), the masses appear near one another. The eye travels in the direction of the dotted line in determining their rhythmic relations. If it is desired to facilitate such movement, a change in the direction of the lines of one or both spots may be made so that the eye may be carried from one to the other with less effort, (b). Masses at

some distance from one another may thus be related, the eye passing over the intervening space with greater or less ease depending on the distance to be traveled and the force given to the movement by the lines which govern it. (c).

TONE.

Up to this point we have dealt with masses apart from tone. This has been for the sake of laying stress upon line as a governing element

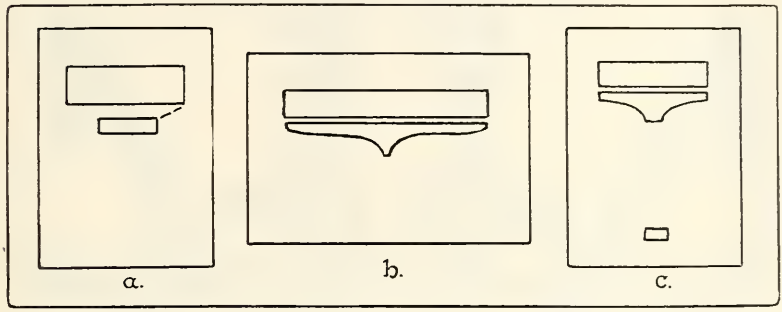


PLATE XIV.

in mass. A difference in the tones of different masses in a design, emphasizes the relations established, by contrasting the decorating spot with the subordinate masses it creates. It also serves to add variety and thus lends interest to the design as a whole.

In the illustration of principles it is convenient to apply tone to the introduced masses. Thus they are made to appear as dark spots upon a light ground. In practice, however, the spots may as often be light upon a dark ground as the reverse. It is to be noted in this connection that an arrangement of masses cannot be translated from black on white to white on black without change. This is due to the fact that a dark mass is more emphatic and noticeable in a design than a light one. An arrangement showing masses of dark on light will thus appear less striking when shown as light on dark. (Plate XV).

MASS ARRANGEMENT.

In the light of the foregoing it must now be the effort of the student to develop in tone, a number of mass arrangements suitable as decorations for a variety of simple spaces. It is suggested that for some time only oblong or square outlines be considered, the problem being to de-

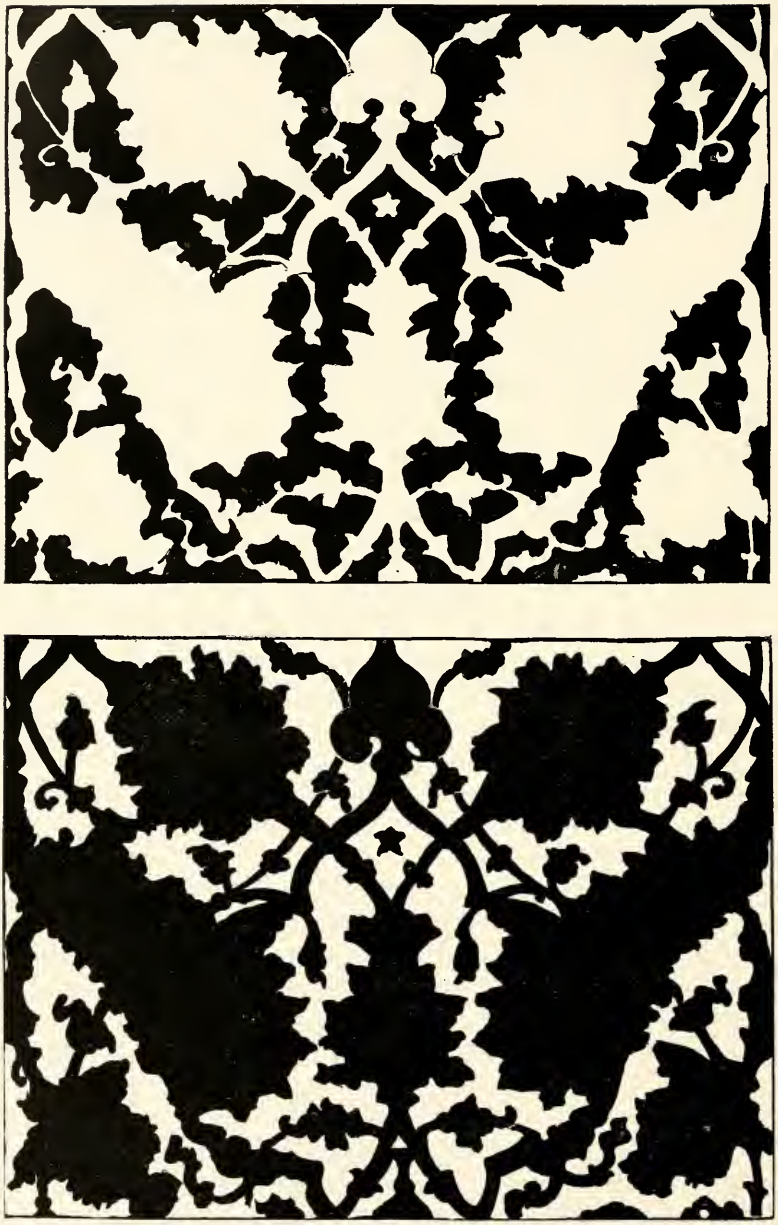


PLATE XV. SCUTARI VELVET.

vise within each space, masses which shall relate themselves harmoniously and maintain the structural nature of the space.

In the solution of these problems the designer will be wise to work always in mass, feeling round the forms he devises and lightly toning them as he proceeds, that the related masses he is creating may stand out, Plate XVI, (a).

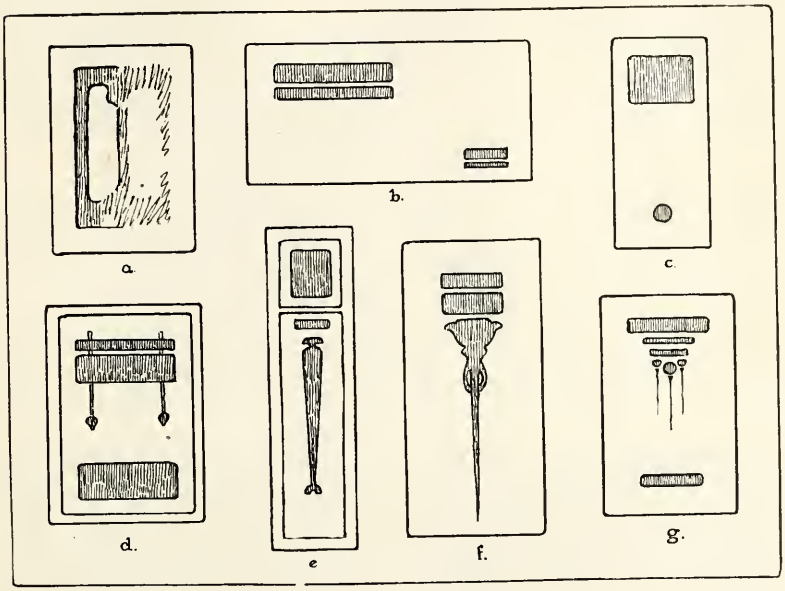


PLATE XVI.

The first designs should be confined to the introduction of a single mass or center of interest into oblongs, vertical or horizontal. Many oblongs of different lengths and widths should be drawn and the decorating mass planned for each with care.

Following these problems, others should be devised showing two centers, (b) and (c). Not a little time should be spent in experimenting with these, that the changes occasioned by an increase in size or an alteration in position of either spot may be thoroughly appreciated. When a variety of these spaces have been thus filled, the student should proceed to decorate other spaces with masses designed to show simple, rhythmic relations, (e) and (f), these being succeeded by others still in which the space has been divided into a variety of shapes by the decorating elements, (d) and (g). A few solutions of the square and oblong are of-

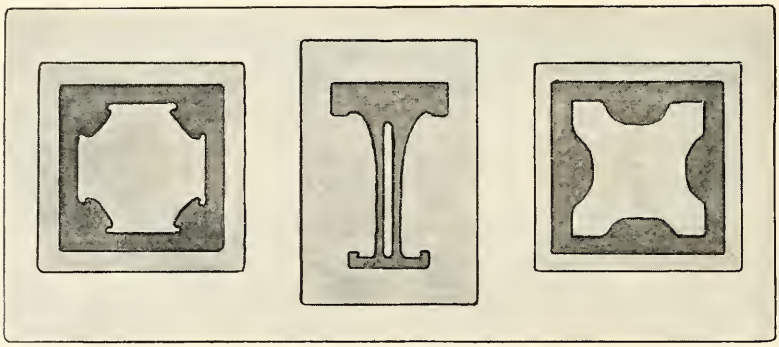


PLATE XVII.

fered, Plate XVII. Each of these by slight changes may be considerably varied, while scores of other simple arrangements may, and should be devised.

In the minds of some, question may arise as to the advantage of proceeding so slowly toward the evolution of ornamental forms. It is therefore, to be emphasized again that upon the understanding of the relation of masses in design all success in practice will depend. After

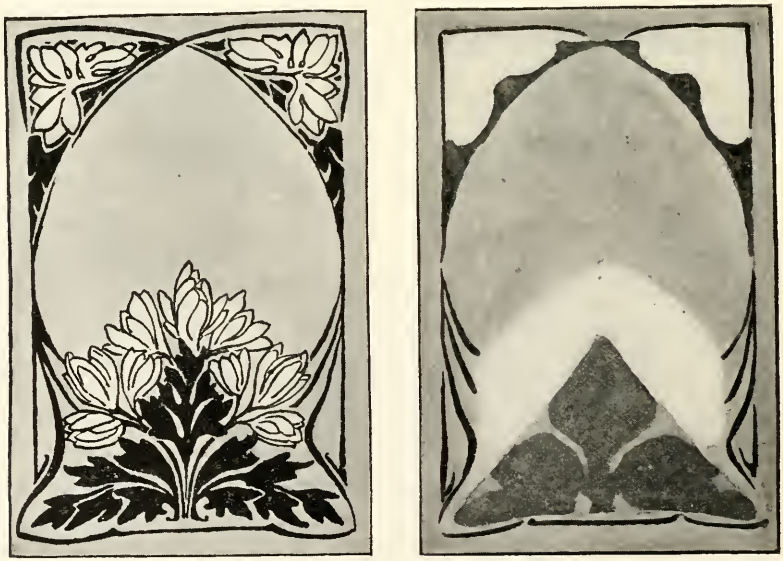


PLATE XVIII. PANEL AND ITS MASS ARRANGEMENT.
DESIGNED BY WAROQUIER.

familiarity with the general principles has given the worker facility, he will be at liberty to develop elaborate patterns in which the structural elements and mass arrangements are disguised by details, but in his earlier practice he will be far wiser to begin all designs by the creation of related masses. He should make it his business to examine with care those designs to which he may have access, to determine the main elements which underlie the pattern. Besides studying these, he will find it of

PLATE XIX. ALL-OVER PATTERN, SHOWING MASS ARRANGEMENT OF LOWER HALF.

advantage to copy the best of the arrangements, ignoring all details and noting only the space relations which constitute at base the design. A scrap book made up of dozens of such mass arrangements will be found most helpful and suggestive to any one who is later to teach or practice. Plates XVIII and XIX show such space arrangements taken from the work of skilled designers.

PRACTICAL PROBLEMS.

Having familiarized himself with the application of the theory the worker may now turn to some practical problem. This may take the form of a book or program cover, Plate XX (a), purse, (d), paper knife handle, (b), or book mark, (c), All of these forms present simple spaces for decoration.

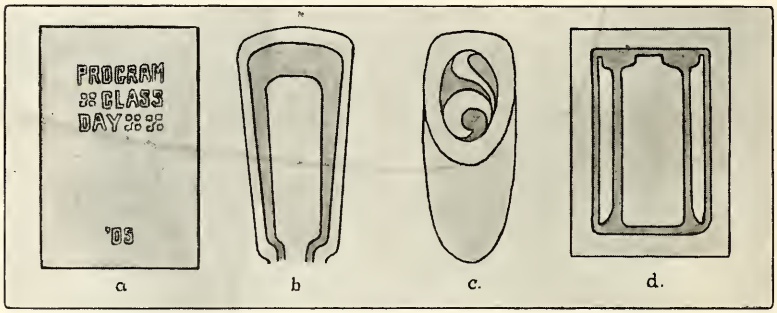


PLATE XX.

As previously noted the student should not be satisfied to make but one design for each problem, but should devise several solutions that he may exercise discriminative judgment in determining the best.

In the case of the covers and programs the larger rectangular spots may be used for lettering, and the smaller for decorative forms like the units and initials suggested in Article I. In filling the spots with lettering, the effect of tone is gotten by equality of spacing and by completing short lines by small florets as indicated in (a).

In solving these problems the principles already presented must be kept in mind. Each design should be structurally sound, each should show variety of masses, each should be simple and should show repose through proper balancing of interests.

In designs similar to those for the book rack end, Plate XXI (b), it will be found well to relate the design structurally to the outline by a strap-like mass paralleling the border of the space. As the form is to be upright, additional interest may be given above by enlarging this mass as shown, (a) and (c). Designs similar to these may with advantage be planned about central panels variously modified.

It is suggested that no designs be carried at present beyond the simple mass arrangement. Indeed, in many cases the strap-like forms

suggested, offer the only decoration needed. Such designs for woodwork, whether incised, carved or stained have the merits of strength and simplicity. Later considerations will indicate how additional interest may be secured when necessary, by further treatment of the masses.

In Plates XVII, XX and XXI it will be noted that the masses in tone have been kept subordinate, and that emphasis has been placed upon the simple panels created in the center of the space. This has been

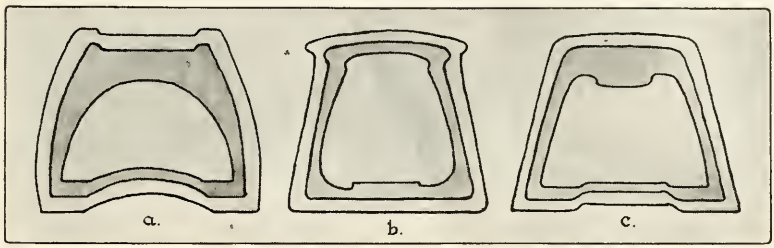


PLATE XXI.

with intention. If the decorative element be not kept of moderate size, it tends to become heavy and leads to over-elaboration in subsequent treatment. When a large and simple mass forms part of the design, it serves to aid through contrast, acts as a foil to the more ornate forms and as a quiet spot on which the eye may rest when weary with the examination of minor details.

The question of what should constitute the proper proportion of light to dark is not one for which a definite rule may be given. It is a relation to be determined by the purpose for which the design is intended and by the elaborateness of the pattern desired. In simple designs the white should, as a rule, equal or exceed the dark. If the design be all of one tone or 'value', the unelaborated mass should exceed that part into which is introduced conventionalized elements or 'subject-matter'. Simplicity will thus be secured. This for the beginner is a result worth striving for.

(*To be continued.*)

METAL-SLOYD ROOM, STOCKHOLM.

SWEDISH METAL-SLOYD.[1]

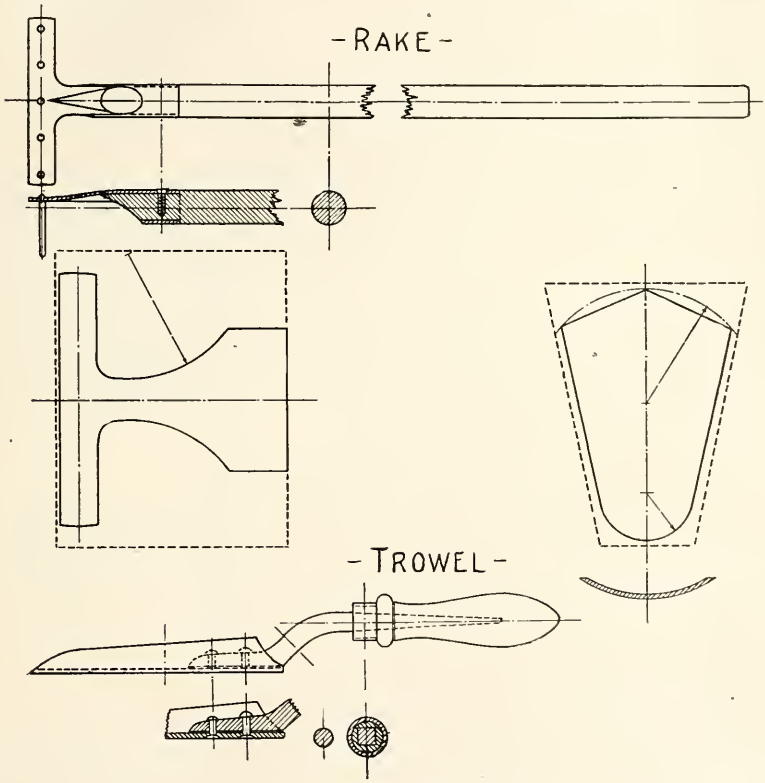
CHARLES A. BENNETT.

THE exhibit of Swedish metal-sloyd at the St. Louis Exposition deserved all the attention it received from American teachers. Coming as it did when unusual interest is being manifested in metalworking as a form of manual training, it was especially timely and suggestive for it showed what kinds of work in metal are being done regularly and successfully by boys in the common schools of Stockholm. Without wishing to repeat the mistake made when Swedish wood-sloyd *in toto* was transplanted into American soil, everyone interested in manual training may again welcome suggestions from Sweden.

From the beginning of manual training in this country, high-school work has included metalworking in some form, but its value in grammar-school work has only just begun to be appreciated. We have forge shops, foundries and machine shops in our manual-training high schools—we have developed some excellent courses in forging and casting; we have done a little handwork in chipping, filing, fitting and soldering; but most

[1] The writer is indebted to Carl Lidman, of Stockholm, member of the commission in charge of the Swedish educational exhibit at the Louisiana Purchase Exposition, for reports, working drawings, etc., and to G. P. Lagergren, of Bradley Polytechnic Institute, for translating parts of the reports and tracing the drawings.

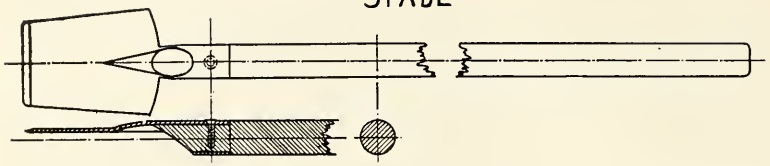
of our work with cold metals is left to machine tools and is done in the last year of the high-school course. By this arrangement we have failed to derive the fullest benefit that may come from handwork in metal. We have utilized it when it is soft and pliable, but not when it is hard and stubborn. Excepting cast-iron and one or two grades of steel, we have not even become acquainted with the common properties of the metals

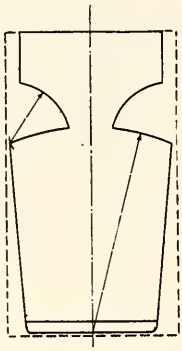


we see about us every day; nor have we learned the fundamental processes in working them. We have kept our work within too narrow limits for the highest educational results.

There are present indications of a change in this respect. We hear of experiments in working copper, brass, Britannia metal and silver, including beating, spinning, stamping, sawing, and etching; construction work with sheet tin, involving soldering; also bent-iron work, both light and heavy, including bending, binding and riveting. Often this

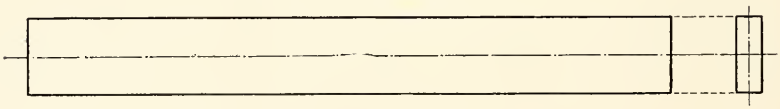
-SPADE-



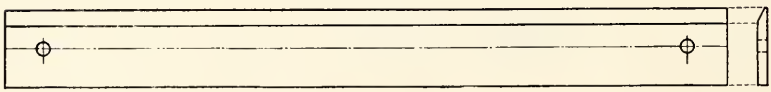


work is inspired and sometimes taught by the teacher of art rather than the teacher of manual training because it serves so well as a means of art expression. The Swedish metal-sloyd is not at all like most of this work. On the contrary it consists of a series of models of useful articles, arranged with reference to the progressive acquirement of skill in the use of hand tools. Somewhere between these two types of work it is possible we may find the kind of manual-training work in metal which will best suit American needs. If the "art-metal" work deals too much with objects of luxury and the metal-sloyd too little with art, a middle course will be better than either. For pedagogical reasons also the medial course is the safer.

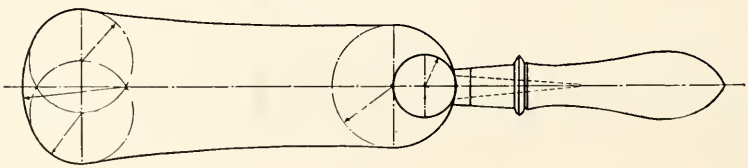
-STRAIGHTEDGE-

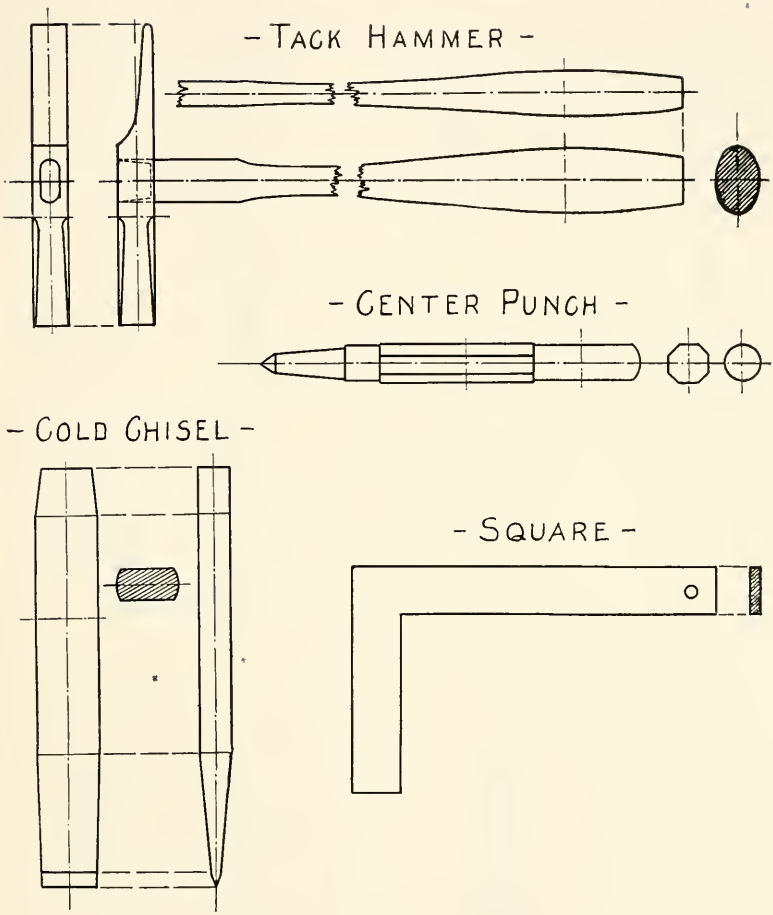


- RULER -



- PANCAKE TURNER -

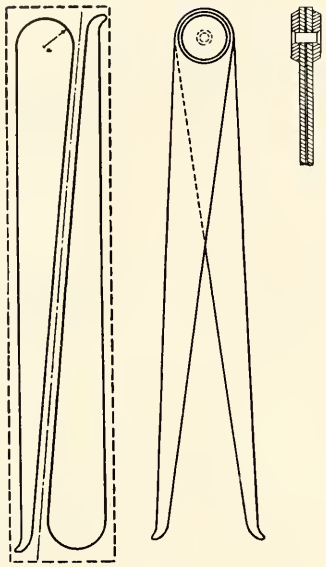




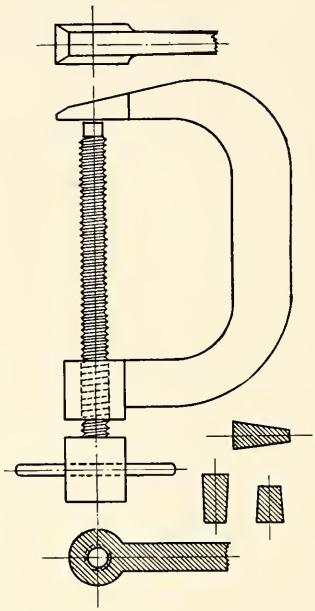
Our American practice of confining the metalwork to the high school has caused the impression to go forth that metalwork is not suited to the grammar grades. The work in Sweden shows this impression to be a mistaken one. Of the 6,767 pupils pursuing courses in sloyd in the city of Stockholm in 1902, 983 were in metal-sloyd, 3,256 in wood-sloyd, and 2,529 in paper-sloyd. There were 13 teachers of metal-sloyd, 42 of wood-sloyd, and 41 of paper-sloyd. The average age of the pupils in metal-sloyd was 12.7 years, in wood-sloyd 12.3, in paper-sloyd 10.3 In Stockholm sloyd is an elective subject, and is taken from 4 to 7.5 hours a week.

The models of the course in metal-sloyd, only a part of which are here presented, may be divided into two series: The first, or elementary, in-

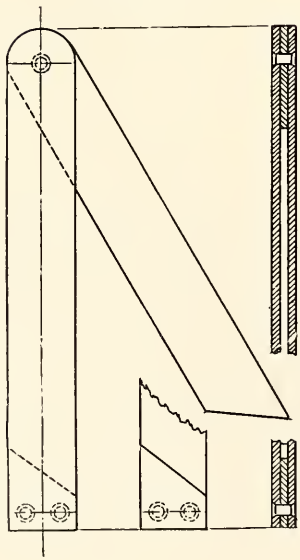
INSIDE CALIPERS -



SCREW CLAMP -



- BEVEL -



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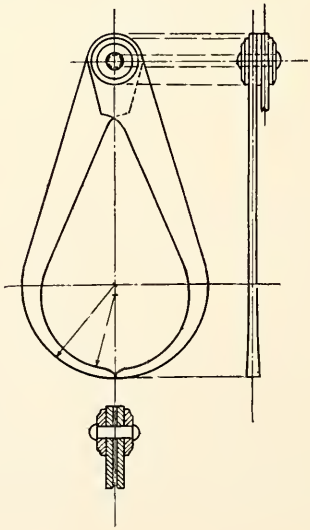
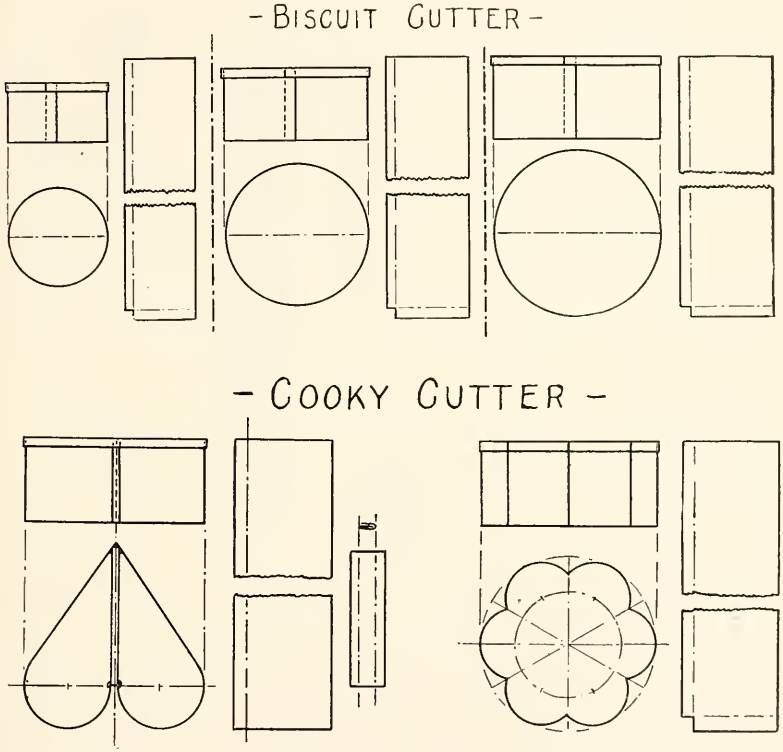
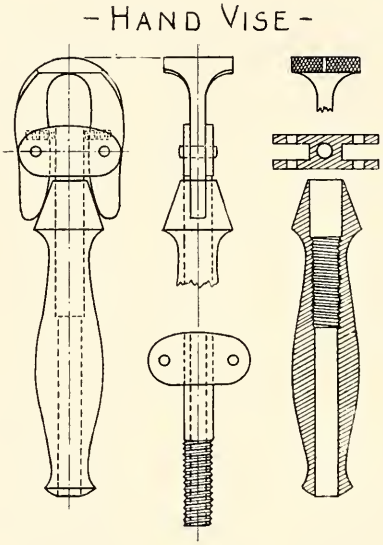


cludes work in chipping, filing, drilling, riveting, turning, hardening, tempering, and screw-cutting. The second, or advanced series brings in sheet-metal work and further experience in all the processes of the first series, leading up to the construction of a small foot-power lathe. All the work is done from models and drawings. Accompanying each drawing is an outline of the process of construction, giving each step in



proper sequence. While this method of presentation, without any variation, would seem too severely mechanical for America, one quickly recognizes that the Swedish metal-sloyd is far better for twelve or fourteen-year-old boys than is the long "chipping and filing" course of exercise pieces which many an American teacher worked through some twenty years ago or less. The objects made in the Swedish courses are more interesting because of their use and because of the greater range of materials and processes involved. When one looks back upon his "chiping and filing" days he can easily believe that the remembrance of such

experiences has kept many of the teachers of manual training from developing handwork in metals. Whatever the causes for the slowness of growth in this direction, metalworking in America is still waiting for some one to develop a type of work which shall be suited to present needs in grammar and high schools. It may be that the Swedish metal-sloyd can help toward such an end.



THE ILLINOIS MANUAL ARTS ASSOCIATION; ITS FIELD AND ITS WORK.[1]

CHARLES A. BENNETT.

ADIES and Gentlemen, Members of the Illinois Manual Arts Association: I have the honor to present the first annual address of the president of the Illinois Manual Arts Association. Organizations of teachers are so numerous that one might wonder whether there are not already too many. There are clubs and circles in individual schools, city teachers' clubs and principals' associations, arts and crafts clubs, science clubs, state associations, sectional associations and the great National Educational Association with its many departments and large membership. Why should we add another to this long and varied list? Why are we met together this evening under these pleasant circumstances as members and friends of the Illinois Manual Arts Association? What is the purpose of our organization? What work are we doing and planning to do, and how are we to do it? These are questions which I wish to discuss with you for a few minutes.

In an excellent report our secretary has related the circumstances under which this association was formed and has given a review of its first meeting. He has also spoken of the later actions of the executive committee and has referred to our constitution. It is from this constitution that we learn something of the form which we have selected for our association, but no constitution is more than a framework upon which to build. It reveals the form but not the spirit. The inner life of an organization like that of an individual is in a large measure independent of its corporate form. Many an imperfectly organized association has done a noble work because of its elevated motive and the loyalty of its members.

Our constitution states that the purpose of our association shall be "the advancement of manual arts in public education and the cultivation of professional spirit among its members," but it remains for the members of the association to determine the nature of this advancement and the quality of the professional spirit which is to be cultivated.

[1] This address, delivered in Peoria February 17, 1905, is published here in full at the request of the Association.—ED.

That this quality may be safe-guarded the constitution restricts the membership to persons who present satisfactory credentials to the executive committee and receive a three-fourths vote of the members present at a regular meeting. On the other hand the membership is purposely not restricted to teachers. We are honored in having on our list of charter members the president of the board of trustees of Bradley Institute. In reality the association is open to any reputable person who is interested in the manual arts as a factor in education, and wide open to him who is willing to help make the organization a means of increasing the efficiency of popular education in the state of Illinois. Our association already has on its membership roll a large percentage of the progressive teachers of manual training in the state. It has also a few of the leaders among teachers of drawing; it should have more. To these should be added teachers of the household arts and such other educators and citizens as are willing to work with us in the accomplishment of our purpose. The association should never become a large one but it should always be a strong one. What is needed in our state at the present time is not more associations which gauge their successes by the number of thousands of persons in attendance, valuable as these may be, but more small groups of earnest workers who are willing to study and experiment and then put what they have discovered into such form that it will become a real contribution to the progress of educational thought and practice. Such results are needed in all branches of educational activity, but in none are they more needed at the present time in the state of Illinois than in the manual arts. Manual training, drawing, domestic economy, and their brother and sister, scientific agriculture and horticulture, are new in the schools, but they are supplying an unmistakable social demand. This is because these subjects typify two elements which have been prime factors in the development of our civilization—industrial occupation and home life.

The manual arts in one form or another are wanted everywhere in our state. Large cities are building manual-training high-schools and are employing special teachers of the several manual arts for the elementary grades; smaller cities are installing manual-training, art and domestic-economy departments in their high school buildings and are sending grammar-school as well as high-school pupils to these centers for instruction; towns are beginning to follow the cities; and the rural schools are asking what they can do. Each school, however, is meeting new problems, and wishes to profit by the experience of others. Our association ought to help such schools. Tomorrow our committee on

"Manual Training for Rural Schools" will tell us what rural schools need, and that some of these schools are looking for helpful suggestions from this association. Our discussion of the details of shop equipments is likely to throw some light on a problem that is especially preplexing because it involves expense.

Not only in technical matters but in problems of correlation and general method our association should render specific help.

Our secretary has shown that our association has already begun to do this needed work; we have begun to experiment and gather data. A question now before us is: How shall we send our findings where they will do the most good? What means of publication shall we adopt?

There are at least two means possible: (1) The regular educational periodicals, (2) a publication of our own. Many educational journals would no doubt be glad to receive from time to time contributions from this association, official or unofficial. The MANUAL TRAINING MAGAZINE has already published a report and three articles, and these have received much favorable comment and brought the association and its work to the attention of many people in distant parts of the country. Probably everyone will agree that this kind of publication should continue.

At the suggestion of the executive committee, State Superintendent Bayliss is likely to publish a part of our report on "Manual Training for Rural Schools," and distribute it through his office to county superintendents, teachers, and others whom it will help. Probably everyone present will agree that this means of broadening our influence is also a desirable one whenever it can be used, but that will not be often.

But the question of a publication of our own has been before your executive committee for some time with the following results: We do not favor an annual report or year book such as is put out by many associations. Such reports too often find their way into garrets or waste baskets where they are never read. They are likely to be uneven in quality due to the fact that they are edited by officers or committees that change with every year. They often contain much that is not worth publishing. They are expensive and can be financed only by a large membership fee or by soliciting advertising. Advertisements detract from the dignity of a publication of this kind and require a large amount of effort to secure. The executive committee approve of such an admirable publication as the Year-Book of the Council of Supervisors of the Manual Arts, but they do not believe our association ought to undertake so large a venture.

In considering a publication your committee have sought to determine just the kind that is needed to meet our own particular conditions. This seems to be merely a series of leaflets or monographs which shall serve as a means of sending forth the conclusions reached after a subject has been investigated and discussed. Such conclusions need not be accompanied by all the discussion of the subject but by the gist of it. With this end in view, your committee suggest that the association publish from time to time in uniform style under a general heading, "Manual Arts Leaflets," for instance, the results of investigations, experiments, discussions, etc. In such a publication, quality, not quantity, should be the aim. These could have a price put upon them and be sold to non-members, though the association might vote to distribute a given number gratis.

To accomplish this result in a satisfactory manner your committee believe that an editorial board should be created. Five persons would probably make a satisfactory number, one member only retiring each year. This arrangement would guard against a shifting policy in the board. At any annual meeting after a timely subject had been discussed to the point of reaching definite valuable conclusions a vote could be passed appropriating a given sum of money for the publication of these conclusions. This money would then be at the disposal of the editorial board and they would take full charge of editing and printing the matter to be published. For instance, within a year we are likely to have something of especial value on the rural-school problem. It is possible that by tomorrow noon we may have discussed either wood-finishing or equipments for a wood-working shop to the point where the matter ought to be turned over to such a board with an appropriation of $35.00. If such a plan were adopted and a high standard of quaiity maintained we would be able after a few years to sell enough of our publications to pay the cost of printing, though that could not be done at first unless the members were to guarantee to be responsible for the sale of a definite number and pay cash for the same.

It is evident that any publication scheme of this kind must have a bearing on the question of reducing the annual dues of the association. With our present membership this could not be done if such a publication scheme was adopted.

In this connection it may be well to state the policy of the association with reference to expenditures. From a discussion of the subject last year it seemed evident that the members desired to have all the necessary printing, stationery, stenographic work, postage, etc., both for offi-

cers and committees, paid for out of the funds of the association. No officer is expected to contribute more than his annual dues toward such expenses. The executive committee have acted with the understanding that the association wished to pay all its own expenses and then demand of its officers reasonable economy and full value for expenditures.

I have discussed these details at some length at this time because I understand that we are an organization that intends to do things as well as talk about things, and if so these details must be of interest to us. But as an association or as individuals we should never allow our enthusiasm for organization or our interest in technical details to obscure the larger fact that we are teachers. Our greatest work is not on association programs or with tools and materials, but with boys and girls who in the future are to make this nation greater. There is no educational virtue in saws or spoons or pencils; it is only as these are made to serve as a means in the development of noble and joyous and efficient men and women that they are of any value. As individual teachers and as an organization I have no doubt we need to be reminded of this very often. I believe, however, that it is not beyond the truth to say that at the present time there is no class of teachers more interested in problems of child development than the teachers of the manual arts. The reason for this is that during the past few years the greatest impetus to the progress of the manual arts has come from a study of the child, the laws of his growth—mental and moral as well as physical, and his relation to society. Yet we need to have kept before us the fact that even as teachers we do not possess much wisdom, and that it may be dangerous to force our imperfect ideals upon our pupils. We should try to bring their ideals up to our standard without closing the way to that which is higher than we have attained. What humbles, yet inspires a teacher more than the thought that among his pupils are boys and girls who some day will be counted among the noted men and women of the nation! And whether they become such or not depends in large measure upon the teacher himself. Will he hold them down to his own standard of attainment, or will he correct their faults, inspire them with his highest ideals, and direct them upward. The teacher should not be a czar to lord it over his pupils, but, to express the thought after the manner of Froebel, the teacher is the gardener who prunes and waters, digs up weeds and lets the sunshine in. Our association can do a needed service by spreading this gospel and by showing how it may be applied in education through the manual arts.

I have tried to make the truth of this clearer and fuller by putting it into the form of an allegory which I read in closing.

TWO GARDENS.

When a boy, I was interested in a garden that I passed frequently on my journeys to and from the city. It was in front of a stately dwelling and was laid out in geometric pattern with walks and flower beds and shrubs and trees. Around the flower beds were low-trimmed hedges of box to separate them from the walks and to provide a green setting for the brilliant flowers in the beds—hollyhocks, marigolds, coxcomb, peonies and others in their season. But the part of this garden that interested me most was not the flower beds, but the trees. All the small ones and some of the large were kept pruned by the gardener. Spruce and arbor vitae were shaped into cones and conoids. One tree represented a fish, another, an animal. Another was made to grow in the form of a hoop, while others had their trunks and limbs bent into wondrous shapes. Freaks of nature? No. The gardener was so skillful that he was able to divert the course of natural growth to such an extent that the trees and shrubs took the forms of his fancy—even to a plant appearing in the form of an animal. Nothing grew in its own free and natural way, except the strongest trees, and they had grown so fast in earlier years that now they towered high above the gardener's ladder and pruning hook. Everything about the garden but these tall trees was conventional and stiff, and the effect was indeed weird. But to my young mind it stood for aristocracy. I imagined the people in the mansion beyond the garden as living in stately leisure, and being waited on by courtly servants. I knew that the dress of these servants was befitting their station, but, like the trees and shrubs in the garden, its form was not of the wearer's choosing, but dictated by the master of the mansion.

And so this garden interested me, but the more I looked at it the less pleasing it became to me. I began to see the artificiality of it all. I saw flaws in the gardener's work, and places where nature refused to obey his commands, and the more of these I saw the less I cared for the garden. As the years went by the gardener grew old, the trees he had stunted lost their vitality and parts of them died. The garden became to me a mockery, a sham, and I wished to see it no more.

But there was another garden that I used to pass, the beauty of which grew upon me with the months and years. In the center of this garden there was a large area of velvety green grass. Beyond this grass plat, and cutting off the view of a corner of the modest dwelling, were dark

cool pines of large size with branches reaching almost to the ground. To the left and just beyond the winding road which lead to the house was a small inviting grove of oaks and maples, and to the right clumps of flowering shrubbery with trees beyond. A few beds of flowers made bright spots which accented the green of the grass. In this garden the pruning hook had no place, except to help nature by cutting out dead limbs and superfluous branches. Each tree was allowed to take the form suited to its nature and environment. The gardener planted new seed and dug up the weeds in summer, but he never arbitrarily interfered with the course of nature. He respected the superior art of the Great Gardener, who made the shaggy coat for the sturdy oak tree and gave sweet perfume to the fairer pine; who wove delicate petals for the rose and painted them with rays from the setting sun.

Year by year this garden grew more beautiful, and the more I looked upon it the more I admired it and wanted to have one like it, and to this day the home I build for myself in fancy is in the corner of such a garden.

EDITORIAL.

The Chicago Meeting

The recent meeting of the Western Drawing and Manual Training Association was one of unusual interest and importance. It was the largest in the history of the Association and the first good opportunity for the teachers of drawing and manual training to prove their ability to work together toward a common end. The result was certainly conclusive. The few who have doubted the wisdom of broadening the scope of the Association can doubt it no longer. Surely nothing of great value has been lost and much has been gained.

But the meeting means more than merely the co-operation of teachers of the several branches of the manual arts in the Central States; it means that a powerful influence for correlation has gone forth which in time will make it impossible for both drawing and manual training to exist in the same school or system of schools in the Mississippi Valley without some vital relationship between them. This is indeed a condition worth working for. May the Association continue to move forward.

—*B.*

Drawing, construction and design are part of the birthright of the little child. They should be taught together, as developmental and socializing agents rising out of real needs of the curriculum of which they form a part. This is the creed of the arts.

A Proposed Union

A short time since the Western Drawing Teachers' Association became the Western Drawing and Manual Training Association. The first meeting of this society has recently been held in Chicago with marked success. At the meeting of the Eastern Art Teachers' Association in April, a motion prevailed to appoint a committee to meet the officers of the Eastern Manual Training Association with a view to a union of the two organizations.

This action is significant. No narrow motives of policy dictated it, for the Art Teachers' Association is in a flourishing condition, and at its last meeting presented a strong and varied program. The proposition is rather a development of the time. More and more is it apparent that

the arts of drawing, construction and design should not be developed apart, and that in their propaganda, the teachers of art and constructive work must stand side by side.

It is to be hoped that the proposed union will be viewed favorably by the members of the Manual Training Association. Of the advantage which would accrue from it there can be no question. In the joint organization a large membership is possible with a reduction in running expenses. With but one meeting to organize each year it would become possible to develop programs of such worth and excellence that the resulting "transactions" would come to have a value outweighing any which has attached to preceding reports.

It is indeed, to the interest of every teacher of art or construction to lend a hand to bring about the juncture, and once brought about, to make the new organization a success. To one with but a tincture of professional pride, a strong association of this kind is an inspiration to better work, while to the teacher that desires professional reputation and acquaintance, it is an essential. Through discussions at its meetings, and contributions to its reports, lies the surest road to professional recognition; through intercourse with its active workers comes the sharpest professional stimulus. The proposed union cannot take place too soon. It will make for the development of a teacher broader than either specialist in drawing or in construction, one of keener insight and wider range.

—*H.*

A vital distinction separates old practice of the arts from new. Of old, the emphasis was upon technique, now it is upon use.

Dr. Pabst's Visit

American teachers of manual training are always glad to welcome teachers of manual training from foreign countries, and during the summer of 1904 they took especial pleasure in extending a warm hand of welcome to Dr. Alwin Pabst, director of the Teachers' Training College at Leipzig. No other foreign school, save the Naas school in Sweden, has exerted so much influence on American manual training during the past decade as has the school of which Dr. Pabst is the honored director. To many, therefore, Dr. Pabst's visit was an opportunity not only to extend a hearty welcome but to express words of personal appreciation.

Dr. Pabst came, not to tell us of the excellence of the German work, but to study American manual training, and he did it. He examined the work shown at the Fair in St. Louis and visited Chicago, Washington, Philadelphia, New York, Providence, Boston and several other cities; and such was his interest that he found his time all too short. In a recent letter he says, "You have so much of interest to me that it is my earnest desire to visit your country at another time."

Soon after his return home Dr. Pabst was invited by the president of the German Association for the Promotion of Handicraft to give an address in Berlin. The audience was a notable one, being made up largely of members of the Chamber of Deputies. The address was received with enthusiasm and aroused lively discussion. Dr. Pabst reviewed the rapid development of manual training in the United States and emphasized certain phases of our work, which he considered especially suggestive. He said that Americans consider that man cannot be symmetrically developed without hand-and-eye training, and that this must begin in childhood. The co-educational feature of American school work was especially noted. In this connection Dr. Pabst said that America had freed itself from a great number of prejudices. He then illustrated this statement by telling of a school in which he saw a boy and girl sitting on the same bench in a cooking lesson. He was favorably impressed with co-education in its effect upon manners and morals. The address closed with the expressed hope that the time would soon come when there will be universal recognition of the necessity of the development of eye and hand for the perfecting of the mind. —*B.*

Amateur painters proudly point to those things in their pictures which "stand out"—professionals seek to have such elements "stand in." In this respect, picture and curricula makers are much alike.

Those who have been interested in the articles by Professor Richards upon the Crafts of India, will find much information and illustrative material concerning the whole field of Indian industries in the following works: The Industrial Arts of India, by Dr. George C. M. Birdwood; Art Manufactures of India, by T. N. Mukharji; Punjab Manufactures, by B. H. Baden-Powell; Official Catalogue of the Delhi Exposition, 1902-1903, by Sir George Watts, on "Indian Art at Delhi, 1903," published by John Murray, of London. Of these the last is the most comprehensive and is very fully illustrated.

ASSOCIATIONS.

THE WESTERN DRAWING AND MANUAL TRAINING ASSOCIATION.

The Chicago meeting of the Western Drawing and Manual Training Association was successful even beyond expectations. In attendance, program, exhibit and spirit, it was excellent. Certainly no better place of meeting than the Art Institute could have been found in America, especially when one takes into consideration the forethought and boundless courtesy of Director French and his assistants. To receive, put in place, repack and ship the two miles in length of exhibit would have been a stupendous task anywhere, yet this was all done by teachers, normal students, and employes of the Institute with comparative ease, and in a most perfect manner. If for no other reason the members of the Association will look back with pleasure to the Chicago meeting because of the generous treatment they received at the Art Institute.

But the meeting was a notable one in other ways also. The program was better than announced. Every speaker on the entire four days' program was present, one only being by proxy, and in addition to these, Professor Arthur W. Dow, of Teachers College, New York, was there and gave an address that contributed much of value to the program. Another feature of the meeting that richly deserves special mention, was the music furnished by a local committee. One could hardly speak in too high praise of the songs by two classes of school children under the direction of their room teachers. Seldom is it possible for anyone to get such artistic class-work in music.

The meeting was formally opened in Fullerton Hall, The Art Institute, by the president, Lucy S. Silke, at eight o'clock on Tuesday evening, April 25th. After a musical selection and the invocation by the Rev. J. W. Stockwell, Jr., the president introduced Director French, of the Art Institute, who gave a most cordial welcome to the Association. He was followed by Dr. Louis C. Monin, who represented Armour Institute, and Superintendent Edwin G. Cooley, and District Superintendent Albert G. Lane, of the Public Schools. In introducing the speakers, the president referred to the interest of Director French in public-school work in drawing, to the help given by the Art Institute in opening its galleries annually to an exhibit of the drawing work of the Chicago public schools and to the fact that the first meeting of the Western Drawing Teachers' Association was held twelve years ago in the Art Institute building.

The program of the evening closed with the president's address, which in spirit and in breadth of thought, was a fitting introduction to the deliberations of the week. She emphasized the fact that we are partakers in a great educational movement and should be sure that our purposes are well defined. "It is true that we are specialists, and it is because we are specialists that we must recognize the movement of all other specialists; being specialists in one line of education merely means that we develop that line not to the exclusion of, but in harmony with all other lines of education." The value of the specialist lies in the fact that he reaches out further in one direction and so adds to the sum total of human knowledge, and contributes to progress.

RELATION OF ART INSTRUCTION AND MANUAL TRAINING.

The session on Wednesday morning was given just the right start by the opening talk by Miss Wilhelmina Seegmiller. She told of what is being done in Indianapolis to bring together art instruction and manual training, and illustrated what she said with examples of work. She explained how she uses the bogus-paper weaving mats, and showed a great variety of patterns. She told of her experiments in dyeing—how she directed her normal students to go out and pick berries and hulls of nuts and boil them to see what colors they could get. In this way, several pleasing dyes had been discovered. But in the large grade classes where conditions are much different, she recommended prepared dyes that need only be mixed in cold water.

Miss Seegmillers's account of her experience with tilo matting was of special interest, for everyone recognized the superior practical and artistic quality of the things made from this medium. The objections to the use of this material—that it is a foreign product, and at present too expensive—were discussed, and the hope expressed that after the present war, these shavings from the Japanese fir tree would not cost so much.

Probably no statement made by Miss Seegmiller met with such unanimous and hearty approval as that concerning the co-operation between the special teachers of drawing and manual training in Indianapolis. The superintendent has allowed the program of these teachers to be so arranged that they can spend one afternoon a week together, working in the shop or drawing room. The character of the Indianapolis exhibit in Chicago was sufficient proof of the value of this plan.

Jane Addams, of Hull House, was the second speaker. Her address, in manner of presentation, form and content, was one of the choicest of the entire convention. We wish it were obtainable for publication in full. She spoke of the importance that play occupies in the life of the child, and then referred to art as furnishing this important play element for the adult.

Following Miss Addams, William E. Roberts, of Cleveland presented a paper on "Art-Crafts and Drawing in Grammar Grades." In discussing the present conditions, Mr. Roberts said that the situation as it stands today "is due partly to influences from without and partly to influences from within—partly to changes in social conditions that surround us and partly to a better understanding of the purpose of our work. Social conditions are demanding very concrete and practical things, and we are realizing that abstract theories do not meet these demands."

"In the relation of social conditions to our problem, we are passing from a period of art in the abstract, and of structure unadorned, to a period of growing appreciation of art applied to structure. The day of art for art's sake, and of utility for economy's sake is giving way to a day of art for man's sake." Art is being combined with utility outside the school. Inside they must not remain separated.

Mr. Roberts believes that the problem of the manual-training teacher to-day is the development of originality and initiative. This means that the work of the classroom must be the evolution of a conscious need on the part of the pupil. "In other words, that the pupil shall, within proper limitations, be granted the privilege of initiative in selecting his project, and in its structure and decoration, adapting it to its use and environment." At this point, the work of the art teacher and the manual-training teacher are closely related.

Concerning the work of the drawing teacher, Mr. Roberts said that the structure is perhaps the weakest point in the art work of the public schools. He believes that the manual-training problems bring to it just the needed element of strength in this direction. "Teachers of manual training must have a knowledge of the principles of design as applied to structure, and art teachers must have some knowledge of structural principles as a basis for design." Supervisors of each subject, "if the two departments cannot be under one head, must be in closest touch and sympathy."

On Wednesday evening, Professor Charles R. Richards, of Teachers College, New York City, gave a thoroughly enjoyable and suggestive lecture on "The Arts and Crafts of the Orient." The lecture covered much the same ground as the articles by Professor Richards in this, and the two previous numbers of the Manual Training Magazine. The lecture was richly illustrated with lantern photographs.

HANDWORK IN THE ELEMENTARY SCHOOL.

Thursday morning, Fred D. Crawshaw gave an account of his experience as principal of the Franklin School, Peoria, in introducing handwork throughout the eight grades. This was a frank, straight-forward statement of the important steps in the regeneration of a large public school through the introduction of handwork. He showed how, in less than two years, it had been possible for the introduction of rational manual training to transform the spirit of a school, convert a school board, and arouse a community that had no more than a passive interest in the school before.

In the first part of his paper, he made it evident that the school in which he was working is not essentially different from thousands of other elementary schools. It is a typical city public school. He then spoke of the twelve teachers in the school, none of whom had received instruction in any kind of manual-training work. Yet, when given a chance to select the medium in which they would work, all were glad to co-operate in carrying out the general plan proposed by the principal.

Mr. Crawshaw showed that the expense of the work was not great, and a considerable part of this was met by the school itself, independent of the funds of the board of education. Whenever possible, equipment was made by pupils themselves.

Following the statement of conditions, Mr. Crawshaw presented several propositions which had governed him in the development of what he preferred to call the social-industrial work of his school, and then he described in detail the work taken up by the successive grades, from the first to the eighth, illustrating each with pupils' work. The work of the lower four grades was closely related to the language and reading, and was used as a means in developing "the story of civilization." In the upper four grades this plan was gradually modified "more prominence being given to the technical side of the work."

The first to discuss Mr. Crawshaw's paper was Dr. Katherine E. Dopp, of the University of Chicago. She approved of the spirit of the work described by Mr. Crawshaw, but severally attacked his theories and his use of terms—especially the terms "social-industrial", and "the story of civilization." Unfortunately she interpreteted several of Mr. Crawshaw's statements in a wholly different way from what was intended, and Mr. Crawshaw was given no opportunity to correct the errors. Had this been done, several of the seeming differences would have vanished.

The second part in the discussion was taken by Luther A. Hatch, principal of the Training School connected with the State Normal School at De Kalb, Ill. He

first complimented Mr. Crawshaw on the concreteness and completeness of his paper, and then commended him for enlisting the co-operation of his corps of teachers. "Without this full sympathy for the work, the results that have been attained could never have been reached." "I have believed for some time," said Mr. Hatch, "that the real solution of many of the more important problems of manual training lies with the teacher who is in closest touch with the child, and in most cases this is the room teacher." Mr. Hatch pointed out the danger of over-systemitization and hoped that Mr. Crawshaw would not be in a hurry to complete a course in manual training for his school. "It is better if it does not become static, because at this point there is danger that progress will be greatly retarded or cease entirely,"

Mr. Hatch was followed by Miss Charlotte A. Reed, of Marshalltown, Iowa, who discussed the paper from the standpoint of a supervisor of drawing. She gave special emphasis to the importance of teaching applied design, and illustrated her points with examples of children's work. She was followed by Miss Emma M. Church, of the Chicago Academy of Fine Arts, who spoke from the standpoint of normal art work. The discussion was closed by Superintendent William H. Hatch, of Oak Park, Ill., in his usual gracious manner. Mr. Hatch especially emphasized the present tendency to elevate the position of the room teacher—she who comes closest to the child. He said that superintendents are learning all they know about pedagogy from the room teachers. As supervisors we must learn where the child stands, what he does and how he feels, and this knowledge must come largely through the room teacher. Such knowledge will solve many of the difficulties in framing courses. "The course of study is something that must be flexible at all times, at all stages, if we are to get the best that there is for the child, and the best that there is in the room teacher."

This closed a discussion, the full report of which should be read by teachers of manual training, as soon as it is published in the proceedings of the Association. It is impossible to give it adequate treatment here.

At this point in the meeting, the president introduced Professor Dow, of Teachers College, New York, who was enthusiastically welcomed by the audience. He read a strong paper on "The Place of Design in Art Education." The paper was originally prepared for a course on education given at Columbia University, and is likely to be printed in full in one of the University publications.

On Thursday afternoon all exhibitors were asked to be in the galleries to explain their exhibits, at hours announced by the president. This new feature of the program proved helpful to many who wanted to ask questions.

The chief social event of the convention took place on Thursday evening. After an illustrated lecture on "Pictorial and Decorative Art" by Mrs. Lucy Fitch Perkins, of Evanston, the audience adjourned to the exhibition galleries where they were received by the officers of the Association, and representatives of the Art Institute and Chicago Board of Education. The evening was especially enjoyable for it afforded opportunity for old friends to meet again, and new acquaintance to be formed.

LANDSCAPE PAINTING.

The session on Friday morning opened with a scholarly paper on "Landscape Painting" by Professor Frank F. Frederick, of the University of Illinois. This paper was unique, in that it was written from the standpoint of a painter, instead of that of the art critic. It reviewed the development of landscape painting during the past century,

pointing out what each man or group of men has contributed to our knowledge of the subject; it explained why modern work really represents a new phase of landscape painting; and then stated the definite ends that the teacher should work for in order that he may have the ability to criticise the work of children, with sympathy and intelligence. In closing, Professor Frederick said:

"We are asking too much when we expect children, in the face of nature, with the difficulties of any medium to contend with, to fix the fleeting effects of nature, or to transpose nature to fit some scheme of composition. With the children, work from nature should be largely topographical. They should make careful studies in what to them seems the easiest-handled medium, and use this data in the schoolroom as material for experiment. This is what the professional artist does. He takes his liberties with nature's composition, and carries out his color schemes within the quiet of his studio—using his sketches as notes only. Of course, many landscapes are painted from nature, but their authors are not children. Take the children, or send them out into the open, and have them bring back truthful drawings in black and white, or in color; and then let the teacher, with a knowledge of how landscape has developed, and its peculiar problems, show them how features may be transposed and colors carried to suit the morning and joy, and the evening and sadness, and the children will grow to appreciate these effects when seen in nature or in art."

In the absence of Charles B. Tibbetts, his paper on "Mechanical Drawing for Preparatory Schools" was ably presented Dr. Louis C. Monin, of Armour Institute. Miss Evaline S. Edwards, of Evanston High School, led in the discussion and was followed by Professors Phillips and Mack, of the University of Wisconsin, Mr. Simons, of Colorado, Mr. Summers, of the Oshkosh Normal School, and several others. The relation of mechanical drawing to shopwork, mathematics and freehand drawing was emphasized, also the importance of making mechanical drawing interesting and having the work done well. Dr. Monin considered good method fundamental.

The last paper of the morning was presented by Charles S. Hammock, supervisor of manual training, State Normal School, Cedar Falls, Ia. His subject was "The Essentials of a Normal School Course in Drawing and Manual Training." In this paper Mr. Hammock showed that he appreciated the difficulties of the problems that confront a teacher in a normal school, and offered suggestions to help in their solution. He said that more time is needed for handwork; drawing and manual training must be more closely associated; the drawing teacher must paint; the manual-training teacher must be a craftsman. Moreover, drawing teachers should work in the crafts, and manual-training teachers should draw and paint. Courses of drawing and manual training should be planned for the county schools; traveling exhibits should be maintained. These are of great benefit to the rural schools, and may be taken from school to school by the county superintendents. The session closed after a lively discussion in which many members took part.

The afternoon session opened with an excellent report on the Berne Congress of 1904, by Charles M. Carter, supervisor of drawing in Denver, Colorado. This report was prepared with greatest care and illustrated with numerous lantern photographs taken by Mr. Carter himself, who was in attendance at the congress, and is a member of the international committee for the next congress, which is to be held in London, in 1908.

Following the report by Mr. Carter, was the annual business meeting. A feature of this meeting was the report of the executive committee, presented by the president

Miss Silke. This report was part of a movement to put the Association on a better business basis and to keep the members better informed concerning the receipts, expenditures, and needs of the Association. Much interest was manifested in this report.

After a lively contest over the next meeting place, it was decided to accept the invitation of President Harper to meet next year at the University of Chicago. The following officers were elected for two years: President, Florence E. Ellis, Grand Rapids; Treasurer, Louis A. Bacon, Indianapolis. The members of the Executive Committee, elected for one year, were Lillian S. Cushman, Chicago; Frank A. Seldon, Chicago; Charles S. Hammock, Cedar Falls; Wilhelmina Seegmiller, Indianapolis.

The convention closed on Friday evening with an illustrated lecture on "The Value of a Line" by Director French, of the Art Institute. Before the members separated, however, Miss Silke, the retiring president, was showered with congratulations which she richly deserved.

CHARLES A. BENNETT.

SCHOOL CRAFTS CLUB.

The third stated meeting of the School Crafts Club was held at the Hotel St. Andrew on Friday, March 10th.

The first part of the program dealt with the question of workshop economics, Mr. William Noyes in the chair.

W. F. Vroom spoke of the handling and storing of materials. Lumber, if not kiln-dried, should be "stuck", i. e., piled in layers separated by sticks or "crossings". The number of crossings to each layer may vary with the length and thickness of boards, but not less than three should be used in any case. Crossings should not vary in thickness and should be placed directly over each other. Placing boards on edge or on end was not recommended, as it leaves them free to warp while drying. Racks and shelving should be provided for storing lumber of various kinds and sizes, including stock cut up for use, short pieces which accumulate, etc., different kinds and sizes to be kept assorted as far as possible. Small boxes, made to fit in a case like drawers, each appropriately labeled, were recommended for screws, brads, nails and miscellaneous hardware. Stains, varnishes, etc., should be used on a zinc-covered table. Brushes may be cleaned with turpentine except those used in shellac, for which a solution of borax should be used. Shellac should not be kept in tin vessels nor applied with iron-bound brushes. Brief mention was made to the care of veneers, glue, cotton waste, etc.

W. M. Mohr exhibited a grindstone of a new composition called agacite, which he recommended as more suitable for the work-shop than either the ordinary grindstone or the emery wheel. The agacite wheel is composed largely of agate and there is less danger of burning the tool with it than with an emery wheel. The stone is fitted with tool rests, and every variety of edge may be ground upon it. It is turned by hand and a high speed is easily obtained, though the gearing is very simple and compact.

C. W. Weick showed some specimens of open-grained wood filled with plaster of Paris and finished with shellac. The wood was first coated with boiled oil, then treated with the plaster mixed with water.

Various devices for use about the work-shop were shown by A. W. Richards, including a bench drawing board, tool rack, saw rack, oil can and waste can. A method

of keeping record of the standing of pupils by means of individual cards was also exhibited.

Other devices were shown by A. W. Garritt. An ingenious method of keeping liquid glue, consisted of a tight wooden box containing two glass tumblers set in plaster of Paris, one to hold glue and the other brushes. A little water poured on the plaster served to keep the whole moist and prevent the glue from becoming thick. A chart case, model of plane iron and sand paper cutting device were also shown.

C. L. Boone gave a short talk on the handling of clay, suggesting that the material be kept in any heavy wooden box or tight closet—an old barrel will do. Unfinished work of the pupils may be put upon shelves in a closet merely covered with a damp cloth. Old clay should be thoroughly dried, broken up and put into water to soak; after soaking a few days then stirred up and allowed to settle. The water can be poured off and the soft clay allowed to dry to proper consistency on a table, one with a plaster top is desirable. Modeling tables for class work are best arranged to seat four students, the table to have a pan in the center of the top and sunk flush with the surface of the table that scraps and clay bits may be easily disposed of at the end of the lesson.

Several other members contributed useful information regarding devices to facilitate the work of the shop or drawing room.

Dr. Haney recommended the library card system for filing lesson outlines, special information, lectures given, lectures heard, etc. Cards should be of uniform size.

At the business meeting committees were appointed as follows: Dr. Haney, Messrs. A. W. Richards, Williston, Noyes and Stimpson to investigate the present status of the apprenticeship system in this country, and Messrs. Vroom, Boone and Stahl to consider the question of the affiliation of the School Crafts Club with the Eastern Manual Training Association.

At the May meeting of the Club the committee on the apprenticeship system made a preliminary report.

The committee on the affiliation of the Club with the E. M. T. A. reported a disagreement, the majority, Messrs. Boone and Stahl, being opposed to affiliation. The report was laid on the table pending the outcome of the movement to amalgamate the Manual Training Association with the Eastern Art Teachers' Association.

The program of the evening was opened with a paper by Hugo Froehlich on "The Relation of Observation Work to Design." Mr. Froehlich dwelt upon the importance of general culture. Good taste is a highly important factor in the equipment of the business man, the professional man or the artisan, as well as the artist. A plumber should be able not only to make a good joint, but also to design his work well, with reference to appearance. In the school, we should teach the appreciation of beauty in nature, art, and literature, and should cultivate the power to tell why a thing is beautiful.

In pictorial design, taste or judgment may be developed by exercises in arranging flower forms, landscape elements, figure, animal and still-life forms, along the lines of the three principles of balance, rhythm and harmony. In decorative design, also, these principles must govern.

The ornament, whatever it may be, must so relate to the object as to be entirely consistent with its purpose and use. For instance, a panel of beautifully grained wood, if well proportioned and of good color, seldom needs additional ornament·

The rhythmic quality of the grain is not improved, but is frequently injured by the addition of carving. Popular taste may prefer a bunch of roses or a realistic picture of dog Rover on a rug; but such decoration violates a fundamental principle—that of harmony.

A rug is made for use; to be placed upon the floor and walked on. The realistic treatment belongs to the painter who wishes to represent on canvas, the roses or the dog, as they appear. The idea of walking on roses or on a flesh-and-blood dog is one that is not agreeable to contemplate. Again, mural decorations too frequently destroy the very idea of the wall. Vistas of arches, trees, or vine-covered bowers, however entrancing they may be in reality, are here out of place, if they destroy the feeling of the wall, and make the observer feel that he can walk through the trees, or the arches, or the bowers, out into nature. On wall-papers, we frequently see realistic bunches of roses or nasturtiums combined with meaningless scrolls. Such designs destroy the quietness of a background, and the flatness which is a structural element of the wall. Decorations should not destroy, but should rather accentuate the structural quality of the thing decorated.

Above all, the art training in our schools should give the student a working knowledge of the laws of beauty, so that when he engages in the problems of life, he may understand and enjoy those laws in their application to his surroundings.

James Hall held that design cannot be developed entirely on abstract lines. We must turn to nature for suggestion. The object of the teacher should be to bring the natural and the abstract together.

Our aim in art teaching is not to make designers of the children, but to open their eyes to beauty. By looking at art works our decorative vision is quickened. We teach pupils through art to appreciate nature. As the observation of nature helps in design so practice in design enlarges the powers of observation.

Frank H. Collins also believed observation of good examples to be a most important factor in the teaching of decorative design. Instruction should begin by impressing on the minds of the pupils the essential difference between pictorial and decorative design, and that this difference is a matter of treatment only. The pupils should understand thoroughly the meaning of convention, and before principles are taught they should have made design after design, using familiar motives from suggestions and examples furnished by the instructor.

Harold Haven Brown spoke on observational work in color as applied to design. Reference was made to the investigations and theories of Albert Munsell and Dr. Denman Ross in the field of color, and a chart used in teaching was shown in which the colors of the spectrum were arranged in concentric circles, the full brilliancy of each tone being in the outer circle and changing by inward steps through successive circles to neutral middle gray in the center.

Any tone was shown to have three qualities: *Color or hue*, or its place in the spectrum; *value*, or its position in relation to white or black; *intensity or chroma*, or the amount of its brilliancy or grayness.

Nature's methods of using color were shown on the chart. The most violent contrasts occur at opposite ends of any diameter of the circle. Drawings by students of buildings silhouetted against a sunset sky illustrated this principle. Three-color photo prints of birds were shown, demonstrating Nature's adherence to definite laws. The rhythms and chords of color found in each bird had been plotted by pupils on the chart and then employed in original designs.

Officers for the ensuing year were unanimously elected as follows:

President, William H. Noyes; vice-president, Arthur L. Williston; secretary, George F. Stahl; treasurer, Walter M. Mohr; committee on program, Albert Garritt, Cheshire L. Boone, William C. Stimpson; committee on admissions, William A. Worth, Frank H. Pierce, Leonard Wahlstrom; committee on entertainment, Charles C. Sleffel, Herman Bucher.

W. F. VROOM.

CHICAGO SLOYD SCHOOL ASSOCIATION.

The annual meeting of the Chicago Sloyd Association was held April 29, 1905, at Kenwood Institute, 40 East Forty-seventh street, Chicago. Reports of work in the city, and from Sloyd teachers in various parts of the country, with a paper by Miss Murray, formed the program of the afternoon.

An interesting letter from Miss Ericson of the Industrial School in San Juan, Porto Rico, was read. While two industrial schools in Porto Rico have been closed by the political party now in power, and the position of supervisor has been abolished, there has been an improvement in the classes, as shown by an increase in numbers and interest. In the San Juan Industrial School cooking has been introduced with good results.

Miss Lagergren's pupils from the State Institution for the Blind, Jacksonville, Ill., attracted much attention at the St. Louis Exposition, and she told of the inestimable service rendered them by permitting them to feel different objects in going about the fair. Her children are able to distinguish woods by odor. During this year they have been engaged in making furniture.

Miss Annette Butler of the School of Education reported the primary work of that school. The first year children are furnishing a house, which was designed by Mrs. French and made by a carpenter. The second-year children have made brick moulds of wood and brick of cement for a rabbit house. The third-year pupils have found delight in handling the gouge, making pen and pin trays, etc.

When community work ceases to be interesting to children formed a vital topic for discussion. The experience of various teachers agreed that the child's strong desire for individual expression and possession made itself manifest in the beginning of the fourth school year. The older children are willing to do community work if the privilege of doing individual work after hours is granted.

Mrs. Schwarz of the Mankato Normal School, Minnesota, reported excellent conditions. The work of the school is in hearty accord with the manual training department. The drawing for models is done under the guidance of the drawing teacher, and the processes in the manual training are used as a writing lesson under the regular teacher. The pupil teachers of the normal department have entire charge of the primary work. A frame for a large play-house with movable partitions and furniture, was made by normal students, and is used in first grade to illustrate reading and language lessons. The sixth, seventh and eighth grades began a doll's house, 5 ft. x 3 ft., for the St. Louis Exposition, it being built in all respects like a real house. Furniture has been made during the year. Boats, skees, sleds, furniture, form the centers of interest for individual work.

Miss Forbes, Eastern Illinois Normal School, reported that her enforced absence from school demonstrated the value of sloyd by a noticeable loss in the regular work of pupils.

Miss Dalby, of Huntington, Ind., spoke of the increased interest of the public in her work. Three schools have added shops this year. An outline of her work follows: Seventh and eighth grade boys, bench work, girls, sewing; sixth grade, basketry; fifth grade, mechanical drawing and cardboard modeling; fourth and third grades, sewing; first and second grades, weaving, sand and clay modeling, illustrating geography and language lessons.

Mrs. Street, of West Pullman, spoke in an interesting manner of her work. She introduced manual training through mechanical and objective drawing. She so aroused the interest of the boys that they utilized wood picked up from the streets and made articles outside of school. The second year she was given two benches and a small room. The third year the school board bought lumber and the children paid for it. The fourth year six benches and a large room were granted. Though lumber is supplied, the so-called useless box and scraps from the Pullman shops are still successfully used.

Mr. Bertram Smith spoke of the work at Hull House, News Boys' Club and Lincoln Center. Pay classes at Hull House result in much better work. Through the manual work three evenings a week, the news boys are given new interests, which keep them off the streets. Their activity is centered about furniture-making for their homes.

At the conclusion of the reports, Miss Anna Murray, of the Chicago Sloyd School, read an interesting and instructive paper on "The Educative Value of Sloyd", embodying in a clear, concise manner the principles for which this phase of constructive work stands. A strong plea was made for the art side of the work and the utilization, of the child's activity to educational ends.

EMILY M. PRYOR, Secretary.

MANUAL TRAINING SECTION OF THE MICHIGAN STATE TEACHERS' ASSOCIATION

The absence of both the chairman and secretary of the manual training section at Lansing, make any authentic report of the proceedings impossible. The writer has been asked by the chairman of the meetings, Mr. Trybom of Detroit, to furnish this MAGAZINE with a synopsis of the proceedings of that section.

Wednesday at 1:30 p. m. the section gathered for the first time in the auditorium of one of the churches, and listened to the following program:

Supt. W. H. Elson of Grand Rapids spoke on the subject "Manual Training in the High School vs. the Manual Training High School." The discussion was led by George M. Brace, supervisor at Marquette. The two papers took the same view of the subject: The manual training high school should be eliminated from consideration except in cities of 300,000 or more inhabitants on account of the expense of maintainance. The discussion showed that the real question was between a manual-training course in the high school, and manual training as an elective. The opinion was expressed that for large schools, the former was desirable, while for smaller places, the latter was more practicable. Considerable interest was manifested in this discussion by the participants, among whom were several superintendents who are considering the introduction of the work the coming year.

"Co-operation between Manual Training Classes in the Different Grades" was the topic of the paper presented by J. H. Trybom, supervisor in Detroit. Mr. Trybom

presented the system followed in Detroit by means of a large chart, so it could be studied more at length. The grades prepare a great deal of material for each other, in cardboard, paper cutting, and in thin wood. The following gives some ideal of the articles made:

ARTICLE	MATERIAL	MADE FOR GRADE	MADE BY GRADE
Tool tray	wood	4 and 5	8
Drawing board	"	6	8
Loom	"	1	8
Cutting board	"	5 and 6	8
Drawing models	"	5	7 and 8
Sand Tray	"	1	7
Pencil Sharpener	"	6	7
Cubes	cardboard	4 and 5	5
Boxes for lentils	"	1	5
Boxes for pegs	"	1	5
Envelopes	"	1	5
Pencil boxes	"	1	5
Finders	"	all grades	5
Borders for sewing	"	1	4
Mats for weaving	paper	1	4
Strips for weaving	"	1	4
Tablets	cardboard	1	4
Calender blanks	paper	1	4
Squares	cardboard	1	4
Oblongs	"	1	4
Circles	"	1	4

Miss Elinor Temple, instructor in Grand Rapids, read a very interesting and instructive paper on "Domestic Science in the Grades."

Thursday afternoon will long be remembered by those who were fortunate enough to be present at the section meeting in the city hall. The attendance was large and the papers very interesting, as was evidenced by the number that remained afterwards to question the speakers about the work illustrated. The first paper "Arts and Crafts in the School Room" was handled by Forrest E. Mann, director of the Arts and Crafts Society in Grand Rapids. Every step was illustrated by demonstration by two assistants, who manipulated metals, producing pierced work, hammered work, and coloring by means of heat and acids. The work was further illustrated by numerous charts displaying pupils work, step by step. The wood-carving and the tooled leather were excellent. The presentation showed Mr. Mann to be a sincere artist in all mediums in which he expresses himself. The paper is too long to be given here, but will be published in the proceedings of the Association.

Mr. F. B. Barker, supervisor in Grand Rapids, gave a very helpful illustrated paper on the subject "Inexpensive and Educational Forms of Manual Training." Basketry was explained and shown to be inexpensive when the teacher took the trouble to have the pupils gather their grasses and reeds instead of buying them. Some very good specimens of this work were shown. Clay modeling is both educational and inexpensive.

ss meeting of the section was of more than ordinary importance. Action was taken that will affect the work of all the schools that have the manual training in their curriculum. The first discussion was on a uniform course of study. Mr. Brace of Marquette presented a course that had been made up from courses of eighteen of the best schools in the country, and urged action as necessary in view of the fact that the Association was to be asked to pass a resolution deploring the attitude of the colleges and University of Michigan in not recognizing manual training work in their entrance requirements. When approached in reference to this matter these institutions were in the habit of replying that there was no standard of work by which they could measure different schools as to their efficiency. The outline presented by Mr. Brace met with unanimous approval and he was authorized to send a copy of it to all the teachers of the state.

COURSE OF STUDY ADOPTED FOR HIGH SCHOOLS IN MICHIGAN.

MAJORS	MINORS
First year.....Joinery	First year.....Cabinet making, pattern-making, carving, turning.
Second year.....Pattern-making	Second year.....Carving, Forging
Third year..Benchwork in metals, forge work.	Third year....Machine-tool work, sheet-metal work.
Fourth year.....Machine-tool work	Fourth year.....Electives

Mechanical drawing four years including orthographic, cabinet, isometric projections as a major and geometrical constructions, perspective and shadows as minors.

A petition signed by all of the superintendents who have manual training in their schools, was presented to the committee on resolutions and later to the Association, which adopted it. It is as follows: This resolution is the same as was passed by the Upper Pennisula Educational Association in the Fall.

Resolved:—That we deeply regret that the attitude of the colleges toward manual-training work in our high-schools, in giving no credit for such work, has a tendency to keep many of the high-school pupils from pursuing this practical line of training, and we wish to urge upon the college authorities the desirabilty of giving some credit to this important line of work.

E. A. Bending was elected chairman and Mr. Ermaline, of Saginaw, secretary for the ensuing year.

In the library of the city hall were some very fine exhibits of manual training work.

GEORGE M. BRACE.

CURRENT ITEMS.

CLINTON S. VAN DEUSEN.

THE May number of the St. Nicholas contains the first of a series of illustrated articles on "Our Friends the Trees", by Edwin W. Foster of the Brooklyn Manual Training High School. It is written in the same graceful style as the articles contributed to Volumes I, II and III of the MANUAL TRAINING MAGAZINE. The illustrations also are similar.

AN association of the manual-training teachers of Indianapolis has been formed. The idea is to bring together the teachers of manual training in both the high schools and grades for the discussion of problems of common interest. The following officers were elected: President, P. W. Covert; vice-president, Louis A. Bacon; secretary, Henry Wolf. At the first regular meeting outlines were given, followed by discussions of the work as carried on in the high school and grades.

Prof. Richards, of the Teachers College, New York City, addressed the members at their last meeting of the school year on "The Trend of Manual Training in the Elementary and High School". After the address a number of questions were asked Prof. Richards along the line of his address and other points relating to manual training by the members and others in attendance.

THE building now being erected for the Technical High School of Springfield, Mass., will be, when completed, the largest and probably the best equipped high school building of this type in New England. It is 238 feet 8 inches long by 214 feet 8 inches deep, and it is designed to accommodate between 900 and 1000 students. There are twenty-two class rooms in the main building varying somewhat in size, the largest accommodating about eighty students and the smallest twenty-four. Besides the regular class rooms in the main building there are eight rooms on the top floor to be devoted to physics and chemistry. In the basement there is a gymnasium 76 feet 6 inches long by 57 feet 9 inches wide, including corridors, with two large locker and bath rooms and four other large rooms to be given over to athletic purposes. A capacious lunch room and other accessory rooms are also located in the basement. The running track of the gymnasium opens into the main corridor on the first floor, directly opposite the main entrance to the building. Above the gymnasium, on the second and third floors, is located the assembly hall, which is large enough to accommodate from 600 to 700 on the main floor and about 200 in the gallery. The mechanical wing, located in the rear of the main building, is of peculiar design and construction and well suited to its special uses. The forge shop, which is about 67 feet square, is located in the center of the basement and is covered by a monitor roof of special design which admits light and provides for ventilation. On one side of the forge shop are located the boiler and engine rooms, and on the other side the foundry and wood-turning shops. This floor also contains two rooms for the plumbing school and the necessary locker rooms. On the first floor of the

mechanical wing we find three rooms designed for machine-shop work and three for joinery and pattern-making. All of these rooms are well lighted by numerous windows and some of them receive light through the low roof which covers the main part of the mechanical wing. The rear of the mechanical wing is carried up two stories higher, and on the first of these additional stories we find three rooms, one for electrical work, another for wood finishing, and another for freehand drawing. The top floor of this elevated portion is entirely given over to the department of mechanical drawing. It is divided into two large drawing rooms, a lecture room and several accessory rooms.

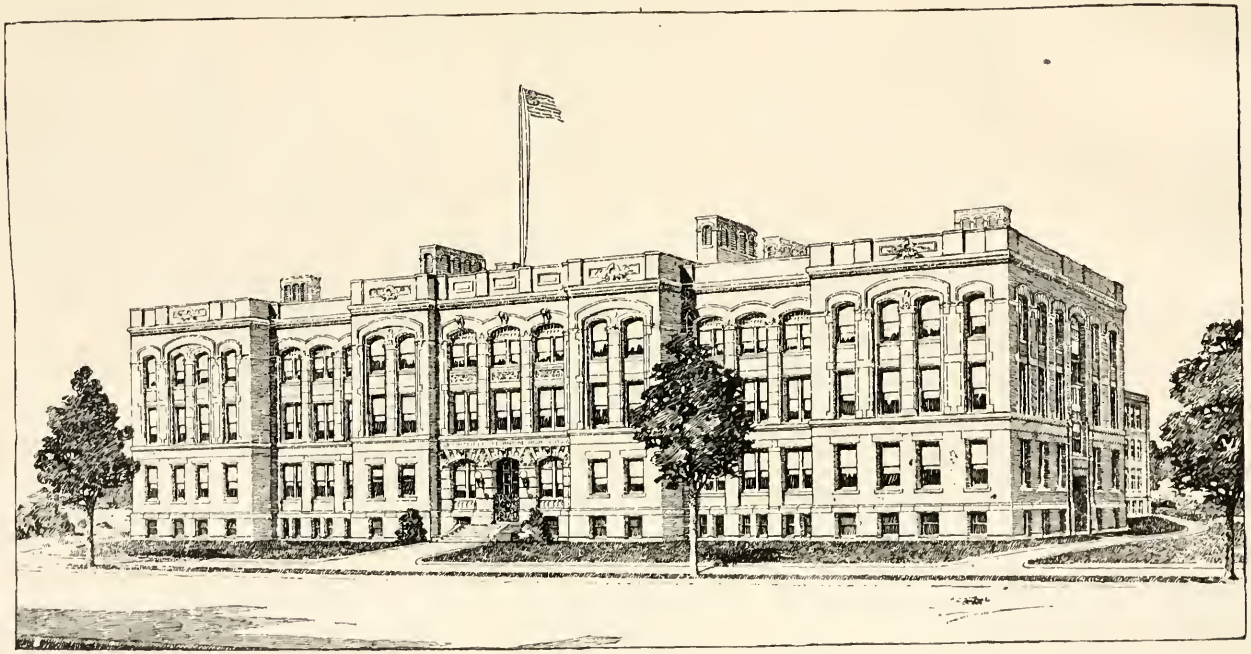
THE main building is to be constructed of a special grade of red brick with Indiana limestone trimmings. The central portion around the main entrance is to be built entirely of Indiana limestone. The entire building is of fireproof construction of the modern reinforced concrete type. This form of construction not only furnishes complete protection against fire, but insures durability, freedom from sound transmission and from dust and other unsanitary conditions. The corridor floors are of granolithic or terrazzo material and the stairs have concrete treads. The building is designed to be of moderate cost and yet provide everything essential to an up-to-date technical high school. It will cost, exclusive of the lot, but including the necessary equipment, not less than $250,000.

J. H. MASON, director of the Training School for Teachers of Manual Training at the Stout Training Schools, Menominee, Wis., has resigned his position and will go to the Pacific coast. S. S. Judd, instructor in iron and woodwork at the same institution, has accepted the directorship of manual training at Saginaw, Mich.

WITH the present year the Denver Manual Training High School has completed its twelfth year of work, sending out in this time 445 graduates. At the beginning of the present school year the course of study was lengthened to four years and a strong commercial course introduced, embracing a thorough training in English, history, mathematics and commercial branches. Other courses provide four years' work in English, modern languages, Latin, science, history, drawing and shopwork. The enrollment is expected to reach 750 this year.

COLLEGE OF INDUSTRIAL ARTS, is the new name given, by the Board of Regents, to the school that has formerly been known as the Girls Industrial College at Denton, Tex. The change was made to avoid the phrasing Industrial School which has been commonly applied to it and which has led many to associate it with reformatory institutions.

DURING the present school year the State Normal and Training School, Oswego, N. Y., has sent out the following men to teach manual training: George E. Webster, State Normal School, Millersville, Pa. Lee N. Taplin, Normal School, Alva, Okla. O. A. Barton, Public Schools, Des Moines, Ia. W. D. Robertson, Public Schools, St. Cloud, Minn. E. Kinyon, Public Schools, Cleveland, O. James Johnson, Supervisor, Ballard, Wash. T. W. Breckheimer, Public Schools, Minneapolis, Minn. V. E. Braman, Public Schools, Superior, Wis. Harry W. Austin, Manual Training and High School, Camden, N. J. Benjamin F. Oot, Las Vegas, New Mexico, (Begins next September.) The salaries paid to these men range from $750 to $1,240. The average salary paid to the ten men is $954.



THE NEW TECHNICAL HIGH SCHOOL, SPRINGFIELD, MASS.

(By courtesy of the *Springfield Republican.*)

IRA C. PICKARD, who had been in charge of the manual-training work at the Madison Grammar School at Minneapolis since last September died of paralysis, March 4. He was a graduate of the Minnesota State Normal School, and was evidently overworking to make a success of his chosen profession.

FARGO, N. D., is making a start in manual training this year. The equipment has been secured by private contributions, and Mr. Greene, of the Moorhead (Minn.) Normal with the assistance of one of his pupils, has been giving instruction there one day each week.

AS the guest of Miss Eunice Bannister, supervisor of drawing, the Peoria School Crafts Club held the closing meeting of a prosperous year at the commodious building of the Peoria Women Teachers' Club. Miss Lucy B. Way was the leader in a discussion of the influence of Froebel's teachings on the grades above the kindergarten. This club has brought into hearty co-operation the leading teachers of the city interested in drawing. manual training, domestic economy and kindergarten.

MR. AND MRS. J. W. CURTIS, who have been spending the year in study at Bradley Polytechnic Institute, giving special attention to manual arts, have accepted a government appointment in the Philippines. They sailed from Seattle May 2. Mr. Curtis was formerly superintendent of schools in Seymour, Texas.

SEVERAL attractive summer-school announcements have been received since the April number went to press:

ARTHUR W. DOW, professor of fine arts at Teachers College, New York, will continue his summer school at Ipswich, Mass. The school will open July 11 and continue for five weeks. Mr. Dow will be assisted by Marshall T. Fry of Teachers College and other special instructors. Besides courses in landscape-painting, theory of design and color harmony instruction will be given in several simple forms of handwork—stencil-cutting, perforated metal, textile printing from wood blocks, and weaving.

THE Handicraft Guild of Minneapolis is conducting a summer school of design applied to crafts which began June 19 and will close July 19. Ernest A. Batchelder is the instructor in design, James H. Winn in jewelry, J. E. Painter in woodwork, Nelbert Murphy in leather, Florence B. Willets and Grace M. Kiess in pottery. The school is under the management of Mrs. Mary Linton Bookwalter.

THE River School at Washington Crossing, N. J., will be open from July 12 to August 18. Richard B. Farley, a pupil of Whistler, will give instruction in painting, Mira Burr Edson in design and Charlotte Busck in applied design.

A SUMMER school of arts and crafts is to be held at Port Sherman, on Lake Michigan. The school is under the direction of Forrest Emerson Mann, of Grand Rapids who will be assisted by Burton A. Mann, of Columbus, Ohio, Judson Decker, of Brooklyn, N. Y., and Elizabeth Traeger, of Muskegon.

THE Lake Winnebago Summer School of Manual Training and Drawing will open August 2nd and close August 29th. This school is under the direction of L. L. Summers, of the Oshkosh (Wis.) Normal School. Instruction will be given in such elementary forms of manual training as are suited to the ordinary school room. The plan of the school involves a combination of work and recreation.

THE Arts and Crafts School to be conducted at Chatauqua, N. Y. from July 8th to August 18th, announces fifteen courses, including three in woodworking, three in art and design work, two in clay work and one in each of the following:—primary manual training, cane and rush seating, art metal work, basketry and weaving, bookbinding and leather work.

NEW YORK CITY.

THE regular monthly meeting of the corps of Shopwork Instructors was held at Public School 30 on April 3d. Mr. Worth explained his methods of filing drawings and charts, showing an ingenious frame which allows working drawings in the form of charts to be inserted and changed at will, besides serving as a portfolio in which to store them.

MR. GARRITT spoke of his system of monitors by which all the details of the care of the shop and its equipment is put in the hands of the boys. He appoints monitors of the work and of the keys, boys to take care of the lumber supply and the waste-wood box, some to oil the vises, clean the closets, sharpen the tools, look after ventilation of room, etc. In this way the instructor is not only relieved of much work, but the lads take a far greater pride in seeing that their shop is kept in first-class condition.

MR. VROOM told of his methods for the sharpening of edge tools. He recommends cork legs for oil stones.

MR. HANDFORD exhibited various devices for keeping sets of tools in racks by which they may be easily transferred in sets from cabinet to work-table and back.

THE board of education contemplates opening a number of evening trade and industrial schools next winter. In Manhattan, P. S. 80, on West Forty-first street, will be organized along industrial lines, and in Brooklyn the Manual-Training high school will open three evenings a week as a trade high school. A trade high school will also be organized in the Bryant high school, Queens.—*School Journal.*

THE new Stuyvesant High School being built between Fifteenth and Sixteenth streets, near Second Avenue, has an actual floor area of about five acres and when completed will be one of the best high school plants in the country. Manual training is to have a prominent place in the work of this school; twenty-five rooms are being provided for the work of that department. The school was organized last fall and the work is being carried on temporarily at 225 East Twenty-third street. Charles B. Howe is in charge of the manual training work in this school.

EUGENE C. COLBY, superintendent of the department of industrial art at Mechanics Institute, Rochester, N. Y., has resigned his position to accept that of New York State Supervisor of Drawing and Manual Training under Dr. Andrew S. Draper, the State Commissioner of Education. Mr. Colby is a graduate of the Massachusetts Normal Art School. After a brief term of service as supervisor of drawing in the public schools of Lawrence, Mass., Mr. Colby came to the Mechanics Institute in 1885. Under his direction the work has grown rapidly. In his new office Mr. Colby's first work will be to compile a syllabus of the work in drawing of the normal and public school system of the state.

REVIEWS.

A Color Notation. By A. H. Munsell. George H. Ellis Co., Boston, Mass., 1905; 6×8 in.; pp. 90, illustrated. The author of this little volume is a painter and a teacher well known to every graduate of the Massachusetts Normal Art School. For years he has aimed at the development of a scientific color notation. This he now presents in a scheme defining color in terms of hue, value and intensity, or, as he denominates the latter, "chroma". The explanation is given in simple and untechnical fashion and is illustrated by numerous diagrams and by a lithograph of the sphere at the center of what he terms "the ideal color solid".

As a method of familiarizing oneself with color properties, the study suggested is to be commended. Every student of painting and every teacher dealing with color will profit by the book's perusal. In the volume is included a course of study for the elementary grades, but this course, based on the author's system, is offered in a tentative way only. As a course it is one of value for the adult rather than the child—for teacher rather than pupil. The teacher familiar with it will have a broad for basis class-room work in color. —H.

How to Make Pottery. By Mary White. Doubleday, Page and Company, New York, 1904; 5×7 in.; pp. 179. Mrs. White, known to teachers through her books on basket-making and bead work. offers in this latest volume some simple descriptions of the processes of pottery-making. Brief chapters are devoted to hand-made patterns, to the wheel, methods of decoration, glazing, etc. For the most part the descriptions given are too condensed to carry the student very far in a knowledge of manipulations. Indeed, as an art, ceramics is one which must be learned at the hands of an instructor before the wheel and kiln. To those anxious to be advised as to the elements of "throwing", glazing and firing, the present volume will serve as an introduction to a more comprehensive study. —H.

A Handbook of Plant Form. By Ernest E. Clark. John Lane, New York, 1905; 7×10 in.; pp. 200, 100 full page plates; price, $2.50. There are several expensive publications illustrating the use of plant forms in designs. The present inexpensive volume offers a large number of drawings of familiar plants, showing each in outline and in sufficient detail to be highly suggestive to the designer seeking "subject matter".

The plates shown will be particularly helpful to the busy supervisory teacher desirous of reviewing the field of available material for class-room charts and illustrations. The drawings are bold and simple and are filled with hints as to their decorative adaptation, though illustrations to this end are omitted that the student may be stimulated to make his own applications. A chapter on methods in design serves as an introduction to the volume. —H.